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Posttraumatic Stress Symptom Clusters and Externalizing Problems in Young Urban African American Adolescents

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LOYOLA UNIVERSITY CHICAGO

POSTTRAUMATIC STRESS SYMPTOM CLUSTERS
AND EXTERNALIZING PROBLEMS IN
YOUNG URBAN AFRICAN AMERICAN ADOLESCENTS

A THESIS SUBMITTED TO
THE FACULTY OF THE GRADUATE SCHOOL
IN CANDIDACY FOR THE DEGREE OF
MASTER OF ARTS

PROGRAM IN CLINICAL PSYCHOLOGY

BY
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CHICAGO, IL

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For Dad.

It is easier to build strong children than to repair broken men.

Frederick Douglass

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ABSTRACT

The purpose of this study was to investigate the associations between five posttraumatic stress symptom (PTSS) clusters and two forms of externalizing problems within and across the middle school years in a low income urban sample of young adolescent African Americans. A secondary aim of this study was to explore moderation effects by gender. Total PTSS positively predicted a little over 58% of the cross-sectional externalizing outcomes and uniquely explained between 5 and 12% of the variance in these outcomes over and above gender and exposure to violence. Total PTSS significantly and positively predicted one-third of the longitudinal outcomes and explained between 2 and 3% of the variance in these outcomes over and above gender, exposure to violence, and previous year externalizing. The five PTSS clusters significantly predicted two-thirds of cross-sectional externalizing outcomes and explained between 6 and 16% of the variance in these outcomes over and above gender and exposure to violence. Numbing emerged as a significant positive predictor of externalizing problems, while dissociation emerged as a significant negative predictor. Intrusion also emerged as a significant positive predictor of delinquency. Six moderation effects by gender were found in which the relation between PTSS and externalizing problems was significantly stronger for boys than girls within years. The impact of exposure to violence and clinical implications of the findings are further discussed.

CHAPTER ONE

INTRODUCTION

Disruptive behavior diagnoses, like Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD), are on the rise (Whitfield, 2004b) and difficult to treat. ODD is also one of the most common behavioral disorders for which clinical treatment is sought (American Academy of Child and Adolescent Psychiatry [AACAP], 2007). ODD and CD are notoriously intractable (Lambert, Wahler, Andrade, & Bickman, 2001) and costly (Foster & Jones, 2005) conditions. Current treatments for conduct problems produce modest results at best (Greenwald, 2002). Incarcerated adolescents are particularly difficult to treat (Baer & Maschi, 2003). About two-thirds of children with conduct problems continue to exhibit these difficulties in adulthood (Hilarski, 2004).

The increase in disruptive behavior diagnoses and the limited success of treatments for these disorders may be at least partially based in undiagnosed and unresolved trauma (Baer & Maschi, 2003; Greenwald, 2002; Maschi, 2006; Whitfield, 2004a, 2004b). The misdiagnosis of Posttraumatic Stress Disorder (PTSD) as another clinical problem in childhood or adolescence is a major concern (Margolin & Vickerman, 2007). PTSD may be misdiagnosed as ODD or CD in some youth for several reasons. First, PTSD is often comorbid with ODD, CD, and externalizing problems more generally (Nock, Kazdin, Hiripi, & Kessler, 2006, 2007; Saigh, Yasik, Oberfield, Halamandaris, & McHugh, 2002). Second, trauma history is nearly a universal

experience in conduct disordered populations, especially incarcerated youth (Baer & Maschi, 2003). Third, the link between trauma history and externalizing problems is well-documented (Whitfield, 2004a, 2004b). Fourth, children and adolescents with subclinical PTSD also evidence significant externalizing problems (Copeland, Keeler, Angold, & Costello, 2007). Finally, different PTSD symptom clusters have meaningful relations with different forms of conduct problems in primarily adult samples (e.g., Sullivan & Holt, 2008; Taft et al., 2007).

Despite this evidence for a relation between PTSD and disruptive behavior problems, it is less clear how individual PTSD symptom clusters relate to different types of externalizing problems in youth over time and how these relations may differ between boys and girls. The purpose of this study was to investigate the associations between five posttraumatic stress symptom (PTSS) clusters (i.e., intrusion, dissociation, numbing, avoidance, and hyperarousal) and two forms of externalizing problems (i.e., aggression and delinquency) within and across the middle school years in a low income urban sample of young adolescent African Americans. This sample was especially suited for this investigation given the high prevalence of behavior problems (AACAP, 2007) and chronic trauma and PTSD (e.g., Horowitz, Weine, & Jekel, 1995) in this population and the developmental presentation of PTSD in adolescence (American Academy of Child and Adolescent Psychiatry [AACAP], 1998). Knowledge of the relations between the five PTSS clusters and aggression and delinquency may illuminate the posttraumatic stress responses that are most predictive of externalizing problems in African American youth. These particular PTSS clusters may then serve as important targets for assessment

and intervention when mental health professionals encounter young clients who present with behaviors that appear to be consistent with ODD or CD.

ODD and CD

ODD is defined by the DSM-IV-TR (American Psychiatric Association [APA], 2000) as “a pattern of negativistic, hostile, and defiant behavior” (p.102) in which the child or adolescent frequently loses his or her temper, argues with adults, actively defies adult demands, deliberately annoys others, refuses to take responsibility for misbehavior, and is easily annoyed, angry, resentful, spiteful, and vindictive. ODD is often a developmental precursor to CD (Rowe, Maughan, Pickles, Costello, & Angold, 2002; Whittinger, Langley, Fowler, Thomas, & Thapar, 2007), a more severe disruptive behavior disorder that involves “a repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated” (APA, 2000, p.98). CD consists of four groups of symptoms including aggression toward people and animals, destruction of property, deceitfulness and theft, and serious rule breaking behavior. A little over 42% of those with ODD later develop CD (Nock et al., 2007).

ODD is usually present by the age of 8 years (AACAP, 2007) and absent by the age of 18 years (Nock et al., 2007), while CD’s median age of onset is 11.6 years (Nock et al., 2006). Earlier age of onset is associated with slower recovery (Nock et al., 2007) and poorer outcomes (Sroufe, Egeland, Carlson, & Collins, 2005). The overall lifetime prevalence rates of ODD and CD in the general population are 10.2% (Nock et al., 2007) and 9.5% (Nock et al., 2006), respectively. The current prevalence of ODD ranges from 2

to 14% in community samples and from 28 to 50% in clinical samples (Boylan, Vaillancourt, Boyle, & Szatmari, 2007). Boys have higher rates of ODD than girls during childhood, but this difference disappears in adolescence (Boylan et al., 2007). However, males have higher lifetime rates of CD than females, 12% compared to 7.1% (Nock et al., 2006). ODD and CD are most prevalent in low socioeconomic groups (AACAP, 2007), a segment of the population that is also more likely to experience trauma and PTSD (e.g., Berton & Stabb, 1996).

Trauma Exposure and PTSD

According to the DSM-IV-TR, the development of PTSD begins with exposure to a traumatic event, an event in which the victim experiences or witnesses a “threat to the physical integrity of self or others” (APA, 2000, p.467) and generally responds with “intense fear, helplessness, or horror” (p.467). Younger victims may respond to traumatic events differently than adults with “disorganized or agitated behavior” (p.467) instead. Terr (1991) further expanded on children’s trauma responses. According to Terr, childhood trauma is “the mental result of one sudden, external blow or a series of blows, rendering the young person temporarily helpless and breaking past ordinary coping and defensive operations” (p.11). The DSM and Terr both define traumatic events as external situations that produce emotional upset in the victim. However, Terr’s definition suggests that traumatic events may produce more widespread upset in children than adults. Some examples of traumatic events include exposure to violence, sexual abuse, physical abuse, diagnosis of a serious physical illness, motor vehicle accidents, natural disasters, fires, etc. (Copeland et al., 2007).

PTSD, as defined by the DSM-IV-TR (APA, 2000), consists of the following three symptom clusters: reexperiencing, avoidance/numbing, and arousal. Reexperiencing symptoms include frequent, intrusive, and disturbing memories or dreams of the traumatic event, reliving the traumatic event, and intense psychological distress or physiological reactivity in response to relevant cues of the traumatic event. Avoidance and numbing symptoms include avoidance of stimuli related to the trauma, inability to remember important details of the traumatic event, reduced interest or participation in important activities, feelings of detachment from others, limited range of affect, and expectations of a foreshortened future. Arousal symptoms include sleeping difficulties, irritability or anger outbursts, concentration problems, hypervigilance, and a heightened startle response.

A DSM-IV-TR (APA, 2000) diagnosis of PTSD requires at least one reexperiencing symptom, three avoidance/numbing symptoms, and two arousal symptoms. This definition of PTSD combines avoidance and numbing symptoms in one cluster despite evidence that suggests that these symptoms actually represent two distinct clusters (Asmundson, Stapleton, & Taylor, 2004). This definition also lacks a separate cluster of dissociative symptoms. However, the three specified clusters include aspects of dissociation including flashbacks, emotional numbing, and amnesia for aspects of the trauma (Moskowitz, 2004).

The DSM-IV-TR's (APA, 2000) definition of PTSD is most consistent with the adult presentation of the disorder. However, the DSM specifies some differences between the adult and child presentations of PTSD. Generally, children are less able than adults to

report their internal experiences. Thus, children's use of play and other concrete behaviors better provide information about their experience of PTSD (Scheeringa, Zeanah, Drell, & Larrieu, 1995). The DSM acknowledges this important feature of children's development by identifying repetitive play and reenactments of the trauma as child presentations of reexperiencing symptoms. Children may also have nightmares devoid of trauma-related content. Despite the inclusion of these child-specific symptoms of PTSD, the DSM criteria appear to inadequately identify PTSD in youth (e.g., Anthony et al, 2005; Carrion, Weems, Ray, & Reiss, 2002; Montgomery & Foldspang, 2006; Scheeringa et al., 1995). For example, one study found that children who do and do not meet full DSM criteria for PTSD share similar levels of functional impairment (Carrion et al., 2002).

PTSD symptoms generally change with development (Pynoos, Steinberg, & Piacentini, 1999). As children mature, their presentation of PTSD increasingly resembles the adult presentation of the disorder (AACAP, 1998). More specifically, the likelihood of experiencing PTSD symptoms from all three DSM symptom clusters increases with pubertal development (Carrion et al., 2002). Not surprisingly, traumatized infants, toddlers, and preschoolers may meet very few DSM-IV-TR criteria for PTSD (Scheeringa et al., 1995).

Traumatized elementary school-aged children may also present with different PTSD symptoms than adults (AACAP, 1998; Hamblen, 2007). These children may not have visual flashbacks or traumatic amnesia (Hamblen, 2007) or exhibit symptoms of avoidance and numbing, particularly a sense of foreshortened future (AACAP, 1998).

Traumatized children may experience time skew (i.e., recalling trauma-related events in the wrong order), omen formation (i.e., believing that warning signs were present before the traumatic event occurred and that one should remain vigilant to prevent future disasters) (AACAP, 1998; Hamblen, 2007), sleep problems (e.g., sleepwalking, bedwetting, night terrors), and concentration difficulties (Davis & Siegel, 2000). Like infants and toddlers, elementary school-aged children may also engage in posttraumatic play or reenactment (Hamblen, 2007).

PTSD more closely resembles the adult presentation of the disorder during adolescence (AACAP, 1998; Hamblen, 2007). However, notable differences may still exist. For example, adolescents who have endured repeated traumatic events may experience a predominance of dissociative symptoms (AACAP, 1998). Adolescents may be more likely to “incorporate aspects of the trauma into their daily lives” (Hamblen, 2007, p.2), reenact the trauma through risk-taking behaviors rather than play behaviors (Davis & Siegel, 2000), and have a sense of foreshortened future (Dyregov & Yule, 2006) than younger children. Adolescents may also experience invasive images, changes in important life attitudes or belief systems, personality changes, impaired relationships, self-injurious behavior, and a variety of comorbid conditions (Lubit, 2008).

Regardless of developmental differences in PTSD symptoms, chronic exposure to traumatic events produces the severest clinical presentation (Dyregov & Yule, 2006). Terr (1991) formulated a distinction between Type I and Type II traumas. Type I trauma results from a single incident, while Type II trauma results from repeated exposure to traumatic events over time. Terr argued that the constant anticipation of threat under

conditions of chronic trauma exposure produces personality changes not evidenced by Type I trauma victims. The more recent term, “complex trauma,” captures “the experience of multiple, chronic and prolonged, developmentally adverse traumatic events, most often of an interpersonal nature...and early-life onset” (van der Kolk, 2005, p.402). Complex trauma may produce poor developmental outcomes with respect to attachment, biology, affect regulation, dissociation, behavioral control, cognition, and self-concept that increase the risk of “additional trauma exposure and cumulative risk” (Cook et al., 2005, p.390).

Prevalence rates of trauma exposure and PTSD vary greatly depending on sample characteristics and research methodology (Dyregov & Yule, 2006). Children and adolescents living in urban poverty experience particularly high levels of exposure to traumatic events (Kiser, 2007). At least one-third of pre-teens and adolescents living in low income urban neighborhoods have been direct victims of community violence (e.g., assault, shootings, muggings, gang violence) and nearly all of these children have witnessed or heard about incidents of community violence (Margolin & Gordis, 2000).

PTSD is a rare condition in the general population of children and adolescents. For example, Copeland et al. (2007) followed a nationally representative sample of over 1,400 9-, 11-, and 13-year-olds through the age of 12, 14, and 16 years, respectively. Of the two-thirds of their sample who experienced at least one traumatic event, 13.4% developed some PTSD symptoms and less than 1% met full DSM criteria for PTSD. However, victims of violent, sexual, or chronic trauma reported a greater prevalence of PTSD symptoms.

The prevalence of PTSD symptoms is considerably higher in samples of children and adolescents from low income urban neighborhoods. For example, Berton and Stabb (1996) reported that 29% of their urban adolescent sample experienced clinically significant PTSD symptoms. Horowitz et al. (1995) reported that 90% of their primarily African American urban adolescent female sample experienced PTSD symptoms and 67% met DSM criteria for PTSD. Kilpatrick et al. (2003) found that noncomorbid PTSD was 2.5 times more prevalent among African American adolescents than their White non-Hispanic peers. McCart et al. (2007) also found that African American adolescents experienced higher levels of community violence and PTSD symptoms than their peers from other racial/ethnic groups. Disadvantaged children and adolescents from urban environments experience many of the risk factors for PTSD including lower perceived social support, higher life stress, higher trauma severity, and continued threats to safety (Hoge, Austin, & Pollack, 2007). Other risk factors include low educational attainment, low intelligence, neurodevelopmental delays, history of mental illness, and peritraumatic dissociation (Hoge et al., 2007).

Important differences in trauma exposure and PTSD prevalence exist between males and females. In their meta-analytic review, Tolin and Foa (2006) reported that adolescent males are more likely to experience traumatic events than their female peers. However, this difference does not hold for all types of traumatic events. Males are less likely than females to experience sexual assault or abuse. Despite males' greater exposure to traumatic events, PTSD is two times more prevalent in females than in males. This gender difference is especially pronounced in epidemiological studies of lifetime

prevalence and also tends to hold when comparing males and females within the same trauma categories.

PTSD, ODD, and CD

Psychiatric comorbidity of PTSD with ODD and CD is notable (Nock et al., 2006; 2007). Children with a history of trauma exposure are up to three times more likely to receive a diagnosis of ODD or CD than those without a history of trauma exposure (Copeland et al., 2007). People diagnosed with ODD or CD at some point in their lives are also about four times more likely than those without these disorders to have a diagnosis of PTSD during their lifetime (Nock et al., 2006, 2007). Adolescent-onset of CD may be particularly associated with higher rates of PTSD (Connor, Ford, Albert, & Doerfler, 2007).

Trauma exposure and PTSD are also relatively common phenomena in samples of conduct disordered populations. Studies of detained youth consistently report higher rates of trauma exposure and PTSD than studies of community samples (Newman & Kaloupek, 2003). For example, Abram et al. (2004) found that over 92% of their sample of newly detained youth in Cook County, Illinois had experienced at least one traumatic event. Over 11% met full DSM criteria for PTSD in the past year. Interestingly, more than half of those with PTSD reported exposure to violence experiences. Samples of chemically dependent youth also produce higher rates of trauma exposure and PTSD than community samples. For example, Deykin and Buka (1997) found that more than 74.7% of their sample of adolescents in residential substance abuse treatment centers had experienced at least one traumatic event. Over 29% of their sample met DSM criteria for

PTSD.

Trauma Exposure and Conduct Problems

Trauma exposure has a well-established relation with conduct problems even in the absence of formal DSM diagnoses. Whitfield (2004a, 2004b) argued that there is a “firm link” between childhood trauma and subsequent conduct problems. He found 49 studies, published between 1937 and 2003, that reported a significant positive association between childhood trauma and behavior problems, including delinquency (2004b). For example, Silverman, Reinherz, and Giaconia (1996) found that young adults who had experienced early physical and sexual abuse engaged in more antisocial behavior than their non-abused peers. Physical abuse was also associated with drug problems in young men, while sexual abuse was associated with alcohol problems in young women.

Whitfield (2004a) also found 56 studies, published between 1977 and 2003, that reported a significant positive relation between childhood trauma and violent behavior. For example, Lansford et al. (2002) found that physically abused primarily Caucasian eleventh graders had higher Child Behavior Checklist (CBCL) aggression scale scores than their non-maltreated peers. This effect was strongest for girls. Whitfield’s (2004a, 2004b) reviews suggest that early and repeated experiences of trauma may at least partially contribute to child and adolescent delinquency and aggression. More recently, Hilarski (2004) found that past year victimization most significantly predicted more sixth grade conduct problems.

Fowler, Tompsett, Braciszewski, Jacques-Tiura, and Baltes (2009) conducted a recent meta-analysis examining the effects of a specific type of trauma exposure,

community violence, on a variety of mental health outcomes, including PTSD, externalizing problems, and internalizing symptoms, across 114 studies. They found that total exposure to community violence had the strongest effect on the development of PTSD symptoms and a moderate effect on the development of externalizing problems. In contrast to the effects for PTSD, lifetime exposure had a stronger impact on externalizing than immediate exposure and greater proximity (e.g., via victimization or witnessing) predicted more externalizing problems. Victimization was a stronger predictor than witnessing, although witnessing still had a significant impact on the development of externalizing problems. Additionally, adolescents reported a stronger relation between exposure to community violence and externalizing problems than children. These findings suggest that exposure to community violence exerts a strong influence on externalizing behavior, particularly for adolescents.

Theories of the Positive Relation between Trauma Exposure and Conduct Problems

Several theories have been proposed to explain the positive relation between exposure to traumatic events and conduct problems. According to developmental theory, the experience of serious traumatic events during childhood can produce persistent and adverse consequences that may worsen throughout development (Maschi, 2006). Affect dysregulation (Cook et al., 2005) and deficits in impulse control (Lisak & Miller, 2003) may be some of these adverse consequences. Affect dysregulation fits within the “reinforcement for coercive behavior model” of conduct problems, a theory that roots the development of externalizing problems in early inconsistent and punitive parental discipline (Greenwald, 2002).

According to the reinforcement for coercive behavior model, children learn to rely on oppositional and aggressive behaviors to get what they want because their parents respond by stopping their punitive discipline practices and/or by giving in to requests (Greenwald, 2002). The affect dysregulation produced by exposure to traumatic experiences may predispose children to engage in noncompliant and coercive behavior which in turn increases aversive parental behavior (Greenwald, 2002). Traumatized children may also engage in noncompliant and aggressive behavior to elicit a predictable parental response (e.g., punishment) in a chaotic home environment (Greenwald, 2002).

Early traumatic experiences may also produce deficits in social cognition that mediate the relation between trauma exposure and conduct problems (Baer & Maschi, 2003). Experiencing traumatic events can produce cognitive distortions in one's basic assumptions about the world and the self including beliefs that the world is a hostile and malevolent place, that antisocial actions are justified in such a world, that violent and delinquent behavior can provide control in such a world, and that the self is unworthy or especially worthy. These beliefs may lead traumatized children to distrust others, to be hypervigilant and hypersensitive to hostile cues in their environment, and ultimately, to lash out aggressively at any suspected threats. Traumatized children's bias for labeling negative emotions as anger and for employing problem solving strategies appropriate to anger (Baer & Maschi, 2003) reinforce these aggressive responses. For traumatized children with negative self beliefs, substance use and incarceration may reflect "self-inflicted punishment" (p.90). On the other hand, those with inflated self-esteem may engage in delinquent and aggressive behavior to take care of themselves regardless of the

cost to others.

PTSD symptoms may reflect these affective and social cognitive deficits and thus, serve as an important mediating variable of the relation between trauma exposure and conduct problems (Wekerle et al., 2001). PTSD symptoms may also mediate this relation for another reason: conduct problems may provide a means of coping with painful PTSD symptoms (Margolin & Vickerman, 2007). The self-medication hypothesis posits a direct causal relationship between PTSD and drug abuse or dependence, one form of delinquency (Chilcoat & Breslau, 1998; Lisak & Miller, 2003). According to this hypothesis, PTSD sufferers use drugs to relieve the painful symptoms of the disorder. PTSD sufferers may also engage in other delinquent behaviors to “reduce their sense of isolation or improve their self-esteem” (Margolin & Vickerman, 2007, p.616). The hyperarousal cluster of PTSD symptoms may particularly increase victims’ vulnerability to perpetrating violence (Lisak & Miller, 2003).

PTSD as Mediator of the Relation between Traumatic Experiences and Conduct

Problems

Research supports the mediational role of PTSD in the positive relation between trauma exposure and conduct problems. Some studies suggest that meeting DSM criteria for PTSD may be an important factor in determining whether or not traumatized children and adolescents develop externalizing problems. For example, Saigh et al. (2002) compared the CBCL externalizing, aggression, and delinquency scale scores of primarily Hispanic traumatized youth with PTSD (i.e., PTSD+), traumatized youth without PTSD (i.e., PTSD-), and non-traumatized control participants. Those in the PTSD+ group had a

significantly higher mean aggression score than those in the other groups, a significantly higher mean delinquency score than the control group, and a significantly greater likelihood of scoring in the clinical range of the total externalizing scale than those in the other groups. More recently, Moretti, Obsuth, Odgers, and Reebye (2006) found that the relation between witnessing parental violence and children's subsequent aggressive behavior was strongest for primarily Euro-Caucasian sons and daughters with PTSD. These results suggest that traumatized children with PTSD are at a higher risk of exhibiting aggressive behavior than those without. Delinquency, on the other hand, appears to be more prevalent among traumatized children regardless of PTSD diagnosis.

Other studies support a differential relation between trauma and delinquency for traumatized youth with and without PTSD. For example, Lipschitz, Rasmusson, Anyan, Cromwell, and Southwick (2000) found that primarily African American urban female adolescents who met full DSM criteria for PTSD smoked more cigarettes and marijuana and were more likely to be suspended from school or arrested than those who did not develop PTSD following trauma exposure. Lipschitz et al. (2003) also found that urban teen girls with full or partial PTSD were more likely to regularly smoke cigarettes and marijuana and drink alcohol than their traumatized peers without PTSD. Interestingly, PTSD had an earlier or concurrent age of onset with substance use problems in 80% of girls who met diagnostic criteria for both PTSD and a substance use disorder. Reed, Anthony, & Breslau (2007) also found that primarily African American young adults who met DSM criteria for PTSD at some point during their lives were at greater risk for drug abuse and dependence than traumatized participants who never developed PTSD.

Subclinical PTSD is also associated with youth conduct problems. For example, Copeland et al. (2007) found that primarily Caucasian children and adolescents who had at least one symptom from each of the three DSM-IV-TR PTSD symptom clusters were at significantly greater odds of receiving any disruptive behavior disorder diagnosis than those without any symptoms of PTSD. Painful recall symptoms were particularly associated with increased risk of CD. Interestingly, Levendosky, Huth-Bocks, Semel, and Shapiro, (2002) also found a positive correlation between reexperiencing symptoms and CBCL externalizing scale scores in their sample of largely African American preschoolers exposed to domestic violence. These results suggest that a minimal number of PTSD symptoms may increase youths' vulnerability to externalizing problems. They also suggest that reexperiencing symptoms may be important for the development of CD and externalizing problems in general.

Total scores on measures of PTSD symptoms also predict delinquency, aggression, and associated feeling states in the absence of DSM disruptive behavior diagnoses. For example, Wood, Foy, Layne, Pynoos, and James (2002) found that detained youth who reported higher levels of delinquent behavior (e.g., gun possession and gang activity) also reported higher levels of PTSD symptoms. McCart et al. (2007) also found a positive association between PTSD symptoms and delinquency in their large national probability sample of primarily Caucasian adolescents. Gellman and DeLucia-Waack (2006) found that total PTSD symptom scores predicted primarily African American violent male adolescents' use of violence. Ortiz, Richards, Kohl, & Zaddach, (2008) found that participants' total PTSD symptom scores predicted both more daily

feelings of anger and greater variability in these feelings among urban African American sixth graders. Dissociation particularly predicted more variability in daily feelings of anger. These results support the notion that PTSD symptoms may reflect problems with emotion regulation. Dissociation may particularly predict fluctuations in anger.

Additional research suggests that dissociation positively relates to aggression. Fehon, Grilo, and Lipschitz (2005) found that higher levels of dissociation were associated with higher levels of violence perpetration in a violent sample of inpatient adolescents. A recent literature review also suggested that dissociation may be a crucial mediating variable in the cycle of violence from early experiences of abuse to later perpetration of violence (Moskowitz, 2004). However, Kaplow, Hall, Koenen, Dodge, and Amaya-Jackson (2008) found a significant but negative relation between dissociation and CBCL total externalizing scale scores in their sample of primarily African American and female sexually abused children. This result may reflect the combination of aggression and delinquency in one scale. Therefore, these results may suggest that dissociation predicts more aggression but not delinquency.

Given the lack of symptom-focused analyses in studies of youth, studies of adult samples provide additional evidence about how specific PTSD symptoms relate to conduct problems. Sullivan and Holt (2008) found that primarily African American female drug users had more hyperarousal symptoms than nonusers and more avoidance/numbing symptoms than alcohol users. Taft et al. (2007) found that higher avoidance/numbing symptoms were directly associated with lower levels of aggression, while higher levels of hyperarousal symptoms were associated with more aggression and

alcohol problems in their sample of male Vietnam veterans. Reexperiencing symptoms were negatively related to alcohol problems. These results suggest that hyperarousal and avoidance/numbing symptoms may be particularly associated with drug use in women. In men, hyperarousal symptoms may particularly predict more aggression and alcohol problems, while avoidance/numbing and reexperiencing symptoms may be associated with lower levels of aggression and alcohol use, respectively.

Some studies have directly tested the mediational role of PTSD symptoms in the relation between childhood maltreatment and externalizing problems. For example, Wekerle et al. (2001) found that PTSD symptoms mediated the relation between childhood maltreatment and teen dating violence for only the female portion of their primarily Caucasian adolescent sample. More recently, Wolfe, Wekerle, Scott, Straatman, and Grasley (2004) found similar results with some notable differences in their largely Caucasian sample of high school students. PTSD symptoms mediated the relation between childhood trauma and teen dating violence for both males and females. More specifically, PTSD symptoms predicted increases in dating violence over a one year period while other potential mediators, like attitudes about dating violence and empathy, did not. These results suggest that PTSD symptoms may play a critical role in the development of violent behavior during adolescence following the experience of traumatic events in childhood.

Despite evidence supporting the notion that PTSD symptoms are a crucial bridge between exposure to traumatic events and subsequent conduct problems, other studies report results that suggest a different relation between trauma exposure, PTSD symptoms,

and conduct problems. According to the high-risk hypothesis, conduct problems are potentially dangerous behaviors that place individuals at an increased risk of experiencing traumatic events and subsequent PTSD (Chilcoat & Breslau, 1998). Contrary to theories supporting the mediational role of PTSD in the relation between trauma exposure and conduct problems, the high-risk hypothesis specifies that conduct problems precede trauma exposure and PTSD.

Several studies of PTSD support the temporal primacy of conduct problems. Some retrospective epidemiological studies of PTSD report an onset of PTSD following disruptive behavior disorder diagnoses in a majority of cases. For example, Nock et al. (2007) found that more than 66% of their adult sample retrospectively reported having ODD at least one year before PTSD. In another study, over 56% of the adult sample retrospectively reported having CD at least one year before PTSD (Nock et al., 2006). Despite the potential shortcomings of retrospective self-report data (e.g., memory errors), these studies suggest that the majority of people with comorbid lifetime diagnoses of ODD or CD and PTSD develop disruptive behavior problems first. However, a sizeable proportion of people show the reverse pattern of onset.

Some prospective studies of the relation between PTSD and conduct problems also support the temporal primacy of conduct problems. Breslau, Lucia, and Alvarado (2006) found that high teacher-reported externalizing problems at 6 years of age predicted greater exposure to assaultive violence and increased likelihood of developing PTSD following exposure to a traumatic event by 17 years of age. Another study, with a 15-year follow-up period, reported similar results, except that first-grade externalizing

problems did not predict increased risk for PTSD following a traumatic event (Storr, Lalongo, Anthony, & Breslau, 2007).

These prospective studies suggest that externalizing problems in early childhood place individuals at increased risk for exposure to traumatic events and the development of PTSD in late adolescence and young adulthood. However, a notable limitation of these studies is their failure to assess exposure to traumatic events and PTSD symptoms in early childhood. Furthermore, a recent prospective epidemiological study of PTSD and disruptive behavior disorders in youth produced contrary findings. Copeland et al. (2007) followed 9- to 13-year-olds through the age of 16 years and found that past year disruptive behavior disorder diagnoses did not predict exposure to traumatic events or PTSD symptoms following exposure to a traumatic event. Lipschitz et al. (2003) also found that substance use disorders began concurrently or following PTSD in a majority of their sample of teen girls.

Summary

Considerable research evidence supports the existence of significant positive relations among trauma exposure, PTSD symptoms, and conduct problems. PTSD is significantly comorbid with ODD (Nock et al., 2007) and CD (Nock et al., 2006). PTSD precedes ODD (Nock et al., 2007) and CD (Nock et al., 2006) in a sizeable minority of cases according to adult retrospective reports. Studies of conduct disordered populations also consistently report higher PTSD prevalence rates than studies of community samples (e.g., Abram et al, 2004; Deykin & Buka, 1997). In the absence of DSM diagnoses, a large body of studies reports a significant and positive association between the experience

of traumatic events and subsequent externalizing problems (Fowler et al., 2009; Whitfield, 2004a, 2004b).

PTSD symptoms may be an important mediating factor in determining whether or not traumatized youth develop externalizing problems like aggression (Moretti et al., 2006; Saigh et al., 2002; Wekerle et al., 2001; Wolfe et al., 2004) or delinquency, including substance use (Lipschitz et al., 2000, 2003; Reed et al., 2007). Total PTSD symptoms positively relate to both aggression (Gellman & DeLucia-Wack, 2006), anger (Ortiz et al., 2008), and delinquency (McCart et al., 2007; Wood et al., 2002).

Several PTSD symptom clusters also appear to have meaningful relations with aggression and delinquency in samples of youth and adults. Reexperiencing or intrusion symptoms positively relate to the development of CD in adolescence (Copeland et al., 2007) and general externalizing problems in preschoolers (Levendosky et al., 2002). It is not clear how this cluster of symptoms relates to aggression and delinquency separately. Dissociation positively relates to daily fluctuations in anger (Ortiz et al., 2008) and aggressive behavior (e.g., Fehon et al., 2005) in adolescence. Avoidance/numbing symptoms are combined in studies of adults and appear to positively relate to drug use in women (Sullivan and Holt, 2008) and negatively relate to aggression in men (Taft et al., 2007). Hyperarousal symptoms positively relate to drug use in women (Sullivan and Holt, 2008) and alcohol problems and aggression in men (Taft et al., 2007).

Despite this research support for positive relations between trauma exposure, PTSD symptoms, and conduct problems, several studies challenge the temporal primacy of trauma exposure and PTSD in these relations. These studies support an earlier onset of

conduct problems in a majority of cases (Nock et al., 2006, 2007). They also find that conduct problems in childhood predict trauma exposure and PTSD several years later (Breslau et al., 2006; Storr et al., 2007). These results suggest that conduct problems may increase people's risk of trauma exposure and PTSD. The conflicting findings surrounding the relation between PTSD and conduct problems underscore the need for continued investigations of this topic that overcome the limitations of previous research studies.

Limitations of Previous Studies

Taken together, previous research investigations of the relations between PTSD symptoms and conduct problems suffer from several limitations that should be addressed by future studies of this topic. First, most of the studies of youth failed to examine the unique relations between different clusters of PTSD symptoms and conduct problems. The majority of youth studies compared those with and without full PTSD diagnoses (e.g., Saigh et al., 2002) or examined associations using total scores on PTSD symptom scales (e.g., Gellman & DeLucia-Waack, 2006). The four studies of youth that isolated different PTSD symptoms in analyses narrowly focused on only one cluster of symptoms (i.e., Copeland et al., 2007; Fehon et al., 2005), examined affective rather than behavioral outcomes (i.e., Ortiz et al., 2008), or recruited a very young sample (e.g., Levendosky et al., 2002). Similar studies of adults (e.g., Sullivan & Holt, 2008) combined avoidance and numbing symptoms, prohibiting examination of how these two symptom clusters may uniquely relate to conduct problems.

Analyzing the unique relations between different PTSD symptom clusters and

conduct problems is important for a couple reasons. First, meeting full PTSD criteria is not required for youth to show significant externalizing problems (Copeland et al., 2007). Second, PTSD symptom clusters may be differentially related to conduct problems. This possibility is already evident in some studies of youth and adults. Further exploration of this issue may help resolve conflicts in the literature. It may also strengthen treatment efforts by identifying the most fruitful targets for assessment and intervention.

The remaining limitations of previous studies examining the relations between PTSD symptoms and conduct problems concern the nature of their outcomes and methods of assessment. Many of the studies examined conduct problems too narrowly by focusing on one type of externalizing problem (e.g., dating violence or substance use) or too broadly by collapsing many types of externalizing problems in one total scale score. Studies generally lack delinquency outcomes other than substance use. Separately examining different types of externalizing problems is important because they may differentially relate to PTSD symptoms. For example, some studies have already produced conflicting findings concerning the relation between PTSD symptoms and delinquency (e.g., Lipschitz et al., 2000; Saigh et al., 2002). Finally, some studies relied on primarily self-report measures from one informant. The use of multiple informants over multiple time periods will increase the validity of findings.

The Present Study

The present study addressed these limitations by examining the unique relations between five different PTSS clusters (i.e., intrusion, dissociation, numbing, avoidance, and hyperarousal) and two different types of externalizing problems (i.e., aggression and

delinquency) with multiple informants within and across three yearly assessment points during the middle school years in a low income urban community sample of young African American adolescents. This sample was particularly appropriate for this investigation for several reasons. First, youth from low income urban neighborhoods experience the highest rates of exposure to traumatic events, particularly community violence (Margolin & Gordis, 2000). Second, African American youth have higher rates of PTSD than their peers from other racial and ethnic groups (Kilpatrick et al., 2003; McCart et al., 2007). Third, conduct problems are most prevalent in low socioeconomic groups (AACAP, 2007). Fourth, investigations of community samples enhance the external validity of findings from clinical and forensic samples. Finally, adolescence is the important developmental period when youth evidence a greater range of PTSD symptoms than during previous ages, including dissociation (AACAP, 1998; Hamblen, 2007). It is also the developmental period when PTSD symptoms and conduct problems may be particularly associated (Connor et al., 2007; Fowler et al., 2007).

Research Questions

This study addressed the following research questions: 1) How are the PTSS clusters of intrusion, dissociation, numbing, avoidance, and hyperarousal related to the conduct problems of aggression and delinquency within and across the middle school years? 2) How do the relations between PTSS clusters and conduct problems differ for boys and girls?

Hypotheses

The first research question addressed the PTSS hypothesis, the idea that

posttraumatic stress symptoms play an important role in the development of conduct problems following exposure to traumatic events. This hypothesis is in line with the idea that posttraumatic stress symptoms reflect the negative developmental and social cognitive consequences of experiencing traumatic events. This hypothesis is also consistent with the self-medication hypothesis, the idea that PTSD sufferers engage in externalizing problems to relieve the symptoms of the disorder. In general, the PTSS hypothesis asserts that total PTSS and the individual PTSS clusters significantly predict aggression and delinquency within and across the middle school years.

With respect to specific relations between PTSS clusters and conduct problems, previous studies suggest the following possibilities: a) intrusion will positively predict aggression and/or delinquency within and across the three yearly assessments, b) dissociation will positively predict aggression within and across the three yearly assessments, c) numbing and avoidance will positively predict delinquency and negatively predict aggression within and across the three yearly assessments, and d) hyperarousal will positively predict aggression and delinquency within and across the three yearly assessments. These possibilities are consistent with the PTSS and self-medication hypotheses.

With respect to the second research question, previous studies of the prevalence of PTSD and conduct problems suggest that gender differences exist in the relations between PTSD symptom clusters and conduct problems. However, specifying specific gender differences in these relations is difficult because previous studies lacked relevant gender analyses. For example, some studies controlled for gender in analyses (e.g., Saigh

et al., 2002), did not analyze the effects of gender (e.g., Levendosky et al., 2002), found no gender differences (e.g., Ortiz et al., 2008), or analyzed exclusively female (e.g., Lipschitz et al., 2000) or male (e.g., Gellman & DeLucia-Wack, 2006) samples. Therefore, the question of gender differences in the relation between PTSS and conduct problems was exploratory.

CHAPTER TWO

METHOD

Participants

A sample of 268 urban African American sixth graders (mean age = 11.65 years, 40% males and 60% females) from six public schools in low-income Chicago neighborhoods were recruited for the first year of a three-year longitudinal study examining youth's exposure to violence from 6th to 8th grade. 254 seventh graders (mean age = 12.57 years, 41% males and 59% females) participated in the second year of the study and 222 eighth graders (mean age = 13.58 years, 41% males and 59% females) participated in the third year. The sample size for the statistical analyses of this study ranged from 115 to 267. The drop in sample size for some analyses was primarily due to incomplete parent-report data or attrition. Data collection began during the 1999-2000 school year.

The six public schools selected for this study were located in high-crime neighborhoods as reported by Chicago Police Department crime statistics for the year preceding data collection. A previous study of this sample found that participants reported exposure to an average of four to five violent acts during the past year (Hammack, Richards, Luo, Edlynn, & Roy, 2004). Consistent with previous studies of similar samples (e.g., Allison et al., 1999; Cooley-Quille & Lorion, 1999), 58% of youth recruited during the first year of the study agreed to participate. Sample participants came

from relatively low-income households with a median annual family income of \$15,000 for all three years of data collection. A previous study of this sample also reported that 69% of participants came from households headed by single mothers and 31% of participants' parents were unemployed (Ortiz et al., 2008).

Procedure

Student assent and parental consent were obtained for all participants. Participants completed a variety of questionnaires that were administered by trained research staff for a period of five consecutive days each year for three years. Participants also took materials home for their parents to complete during each assessment period. Participants returned the completed parental questionnaires to project staff during each wave of data collection. This study analyzed self-report and parent-report data from all three years of data collection.

Measures

PTSS

Participants' average daily levels of distress were measured each year with the Trauma Symptom Questionnaire (TSQ). This measure was adapted from the Checklist of Child Distress Symptoms by Richters and Martinez (1993) and the Trauma Symptom Checklist for Children by Briere (1996). The TSQ consists of five subscales that correspond to the PTSS clusters of intrusion, dissociation, numbing, avoidance, and hyperarousal. Participants completed the TSQ once a day for five consecutive days each year for three years. Each day, participants rated how true twenty-five symptoms were for them on a 3-point scale from 0 (*not true at all*) to 3 (*very true*) which yielded five total

PTSS scores which were then converted to daily averages. The mean of each participant's five average scores was taken to yield one average PTSS score for each participant each year. The total TSQ demonstrated high internal consistency for years one ($\alpha = .94$, $N = 268$), two ($\alpha = .95$, $N = 257$), and three ($\alpha = .92$, $N = 221$).

Five PTSS cluster subscales were created with the items from the TSQ. The intrusion subscale consists of eight items (e.g., "I remembered something scary even when I didn't want to") with adequate internal consistency for years one ($\alpha = .89$, $N = 269$), two ($\alpha = .92$, $N = 257$), and three ($\alpha = .85$, $N = 221$). The dissociation subscale consists of five items (e.g., "Felt like things weren't real") with adequate internal consistency for years one ($\alpha = .83$, $N = 273$), two ($\alpha = .88$, $N = 259$), and three ($\alpha = .85$, $N = 221$). The numbing subscale consists of five items (e.g., "Unable to feel upset [mad, sad, or scared] even when bad things happened") with adequate internal consistency for years one ($\alpha = .72$, $N = 273$), two ($\alpha = .79$, $N = 259$), and three ($\alpha = .67$, $N = 221$). The avoidance subscale consists of two items (e.g., "Tried very hard not to think about something bad or scary that happened to me or someone else") with adequate internal consistency for years one ($\alpha = .80$, $N = 273$), two ($\alpha = .85$, $N = 259$), and three ($\alpha = .86$, $N = 221$). The hyperarousal subscale consists of five items (e.g., "I watched things around me really closely so nothing bad would happen") with adequate internal consistency for years one ($\alpha = .89$, $N = 270$), two ($\alpha = .77$, $N = 257$), and three ($\alpha = .72$, $N = 221$). The same procedure described above was followed to yield participants' average scores for each subscale each year. Refer to Appendix A for subscale items on the TSQ.

Aggression

One parent-report and one child-report scale were used to measure participants' yearly levels of aggression for three years. The guardians of participants reported their children's aggressive behavior on the 20-item Aggressive Behavior syndrome scale of the Child Behavior Checklist or CBCL (Achenbach, 1991) yearly. The CBCL is a widely used norm-referenced behavior rating scale that consists of 113 items rated on a 3-point scale of truth from 0 (*not true*) to 2 (*very true or often true*). The items on the Aggressive Behavior scale reflect violent and oppositional conduct (e.g., "Gets in many fights"). Participants' scale scores were calculated by taking the mean of their caregivers' responses to scale items. The CBCL Aggressive Behavior scale demonstrated adequate internal consistency for years one ($\alpha = .88$, $N = 138$), two ($\alpha = .90$, $N = 147$), and three ($\alpha = .88$, $N = 156$). Refer to Appendix B for all items on the CBCL Aggressive Behavior scale.

Child-reported aggression was measured yearly using a combination of the Things I Do scale (TID) and aggression items from the Juvenile Delinquency Scale (JDS). The 9 items of the TID reflect aggressive and oppositional behavior (e.g., "How often do you push or shove others?") on a 4-point rating of occurrence from 0 (*never*) to 3 (*a lot*). The JDS was adapted from the Delinquency Self-Report measure by Tolan (1988) and the Self-Report of Early Delinquency Scale by Moffit and Silva (1988). The JDS consists of twenty-three items that reflect serious rule-breaking and violent behavior rated on a 6-point scale of occurrence from 0 (*never*) to 5 (*5 times or more*). Seven items that reflect severe aggression were selected from this measure (e.g., "I have attacked someone with a

weapon in order to hurt or kill them”).

The TID and JDS were significantly correlated for years one ($r = .36, p < .001$), two ($r = .28, p < .001$), and three ($r = .40, p < .001$). Therefore, using a procedure similar to that of Li, Nussbaum, and Richards (2007), items from these two measures were standardized and combined to create the child-report of aggression variable. Reliability analyses were conducted and four items were removed due to low corrected item-total correlations ($r < .25$) across the three time points. The resultant scale consisted of 12 items (8 TID items and 4 JDS items) with adequate internal consistency for years one ($\alpha = .82, N = 240$), two ($\alpha = .81, N = 233$), and three ($\alpha = .81, N = 215$). Refer to Appendix C for TID-JDS items.

Delinquency

One parent-report and one child-report measure were used to assess participants' yearly levels of delinquency for three years. The guardians of participants reported their children's delinquent behavior on the 13-item Delinquent Behavior syndrome scale of the CBCL (Achenbach, 1991) yearly. The items on the Delinquent Behavior scale reflect offensive and rule-breaking behavior (e.g., “Truancy, skips school”) on a 3-point truth scale from 0 (*not true*) to 2 (*very true or often*). Participants' scale scores were calculated by taking the mean of their caregivers' responses to scale items. The CBCL Delinquent Behavior scale demonstrated adequate internal consistency for years one ($\alpha = .75, N = 184$), two ($\alpha = .81, N = 152$), and three ($\alpha = .78, N = 173$). Refer to Appendix D for all items on the CBCL Delinquent Behavior scale.

Participants also reported their nonviolent delinquency on selected items from the

JDS-SR yearly. The JDS-SR consists of sixteen nonviolent delinquency items that reflect serious rule-breaking and illegal behavior (e.g., “I have taken something from a store without paying for it”) on a 6-point scale of occurrence from 0 (*never*) to 5 (*5 times or more*). Participants’ scale scores were calculated by taking the mean of their responses to scale items. The JDS-SR delinquency scale demonstrated adequate internal consistency for years one ($\alpha = .88$, $N = 271$), two ($\alpha = .85$, $N = 236$), and three ($\alpha = .81$, $N = 220$). Refer to Appendix E for all JDS-SR nonviolent delinquency items.

Exposure to Violence

Participants reported their levels of exposure to violence on the witnessing and victimization subscales of the 25-item Exposure to Violence Scale – Revised (EV-R) yearly. This measure was adapted from the My Exposure to Violence Interview by Buka et al. (1997). Participants rated how often they had ever witnessed violent acts (e.g., “Have you heard or seen a fight that made you feel afraid?”) on the 13-item Witness subscale. They rated how often they had ever been the victims (e.g., “Have you been hit, kicked, or beat up by someone?”) of violent acts on the 12-item Victim subscale. Both subscales use a 5-point scale from 0 (*never*) to 4 (*four or more times*). It is important to note that the EV-R is not a broad measure of trauma exposure. It narrowly focuses on exposure to violence experiences. For the purpose of controlling for exposure to violence in analyses, participants’ scale scores were calculated by taking the mean of all their responses to subscale items. The EV-Witness subscale demonstrated adequate internal consistency for years one ($\alpha = .71$, $N = 257$), two ($\alpha = .74$, $N = 230$), and three ($\alpha = .75$, $N = 208$). The EV-Victim subscale demonstrated adequate to low internal consistency for

years one ($\alpha = .71$, $N = 255$), two ($\alpha = .50$, $N = 235$), and three ($\alpha = .59$, $N = 206$). Refer to Appendix F for EV-R items.

Demographics

Participants reported their gender. Gender was included as a control variable for all analyses. Gender was also analyzed as a moderating variable. Participants' guardians also reported their annual family income yearly for three years. Family income was included as a potential control variable but was excluded after correlational analyses revealed a lack of significant relations with outcomes of interest (see Results section). Refer to Table 1 below for a summary of the constructs evaluated in this study and their corresponding measures.

Table 1. Summary of Study Constructs and Corresponding Measures

Variable Type	Construct	Measure	Reporter
Predictor	PTSS	TSQ Total and Subscale Scores (Numbing, Avoidance, Dissociation, Hyperarousal, and Intrusion)	Child
Outcome	Aggression	CBCL Aggression Subscale	Parent
		8 items from the TID combined with 4 aggression items from the JDS	Child
	Delinquency	CBCL Delinquency Subscale	Parent
		JDS nonviolent delinquency items	Child
Moderator/Control	Gender	Male or Female	Child
Control	Exposure to Violence	EV-R Witness and Victim Subscales	Child

CHAPTER THREE

RESULTS

Preliminary Analyses

The means and standard deviations for reports of PTSS, aggression, delinquency, exposure to violence (witnessing and victimization), and family income at all three assessment points were examined. Then, these variables were tested for skewness and kurtosis. Nine variables, including witnessing violence (year 2), violence victimization (all years), intrusion (year 3), CBCL delinquency (year 1), and JDS delinquency (all years), were positively skewed and were corrected using log transformations (Tabachnick & Fidell, 1996).

Correlational Analyses

The correlations between the independent variables are presented in Table 2 (next page). The correlations between the independent and dependent variables are presented in Table 3 (page 36). Year 1 total PTSS was significantly and positively associated with parent-reported delinquency for year 2 and child-reported aggression for years 1 and 3 and delinquency for years 1 and 2. Year 2 total PTSS was significantly and positively associated with parent- and child-reported aggression for years 2 and 3, parent-reported delinquency for years 2 and 3, and child-reported delinquency for year 2. Year 3 total PTSS was significantly and positively associated with parent- and child-reported aggression and parent-reported delinquency for the same year.

Table 2. Means, Standard Deviations, and Correlations between Independent Variables (N = 221 – 274)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
1. PTSS1	1																		
2. PTSS2	.40**	1																	
3. PTSS3	.19**	.55**	1																
4. Numb1	.76**	.27**	.17**	1															
5. Numb2	.32**	.82**	.45**	.23**	1														
6. Numb3	.16**	.41**	.74**	.16**	.35**	1													
7. Avoid1	.71**	.33**	.18**	.45**	.26**	.14**	1												
8. Avoid2	.38**	.73**	.37**	.20**	.52**	.19**	.49**	1											
9. Avoid3	.12	.34**	.70**	.08**	.22**	.39**	.18**	.42**	1										
10. Diss1	.82**	.27**	.08**	.59**	.20**	.09**	.48**	.22**	.01	1									
11. Diss2	.24**	.83**	.55**	.09**	.65**	.50**	.17**	.48**	.23**	.24**	1								
12. Diss3	.10	.43**	.80**	.04**	.38**	.54**	.08**	.23**	.41**	.09**	.53**	1							
13. Intrus1	.95**	.37**	.17**	.62**	.29**	.13**	.63**	.35**	.10	.69**	.23**	.08**	1						
14. Intrus2	.39**	.94**	.45**	.28**	.70**	.31**	.29**	.62**	.28**	.27**	.74**	.34**	.37**	1					
15. Intrus3 ^a	.21**	.54**	.90**	.19**	.43**	.56**	.14**	.35**	.60**	.08**	.51**	.62**	.21**	.48**	1				
16. Hype1	.90**	.39**	.22**	.59**	.29**	.21**	.57**	.35**	.13	.66**	.23**	.12	.84**	.38**	.24**	1			
17. Hype2	.42**	.89**	.48**	.35**	.65**	.38**	.31**	.64**	.30**	.26**	.64**	.32**	.37**	.83**	.47**	.41**	1		
18. Hype3	.20**	.45**	.89**	.19**	.38**	.62**	.20**	.29**	.56**	.08**	.38**	.60**	.16**	.37**	.76**	.22**	.47**	1	
M	.54	.34	.19	.48	.31	.17	.82	.57	.33	.53	.33	.20	.52	.31	.12	.59	.38	.25	
SD	.45	.41	.27	.45	.42	.26	.70	.72	.61	.52	.49	.38	.54	.47	.25	.52	.45	.36	

Note: PTSS1 = year 1 total posttraumatic stress symptoms, PTSS2 = year 2 total posttraumatic stress symptoms, PTSS3 = year 3 total posttraumatic stress symptoms. Numb1 = year 1 numbing, Numb2 = year 2 numbing, Numb3 = year 3 numbing. Avoid1 = year 1 avoidance, Avoid2 = year 2 avoidance, Avoid3 = year 3 avoidance. Diss1 = year 1 dissociation, Diss2 = year 2 dissociation, Diss3 = year 3 dissociation. Intrus1 = year 1 intrusion, Intrus2 = year 2 intrusion, Intrus3 = year 3 intrusion. Hype1 = year 1 hyperarousal, Hype2 = year 2 hyperarousal, Hype3 = year 3 hyperarousal. M = mean, SD = standard deviation.

^a log transformed variable.

* $p < .05$. ** $p < .01$.

Table 3. Means, Standard Deviations, and Correlations between Independent and Dependent Variables (N = 126 – 265)

Variables	Agg1 (p)	Agg2 (p)	Agg3 (p)	Agg1 (c) ^a	Agg2 (c) ^a	Agg3 (c) ^a	Del1 (p) ^b	Del2 (p)	Del3 (p)	Del1 (c) ^b	Del2 (c) ^b	Del3 (c) ^b
PTSS 1	.07	.08	.13	.26**	.07	.17*	.11	.16*	.09	.26**	.22**	.13
PTSS 2	.16*	.28**	.26**	.28**	.25**	.19**	.16*	.26**	.25**	.13	.34**	.11
PTSS 3	.00	.21*	.17*	.10	.17*	.16*	.12	.24**	.24**	.10	.28**	.12
Numbing 1	.05	.06	.10	.28**	.04	.18*	.09	.12	.10	.29**	.19**	.13
Numbing 2	.09	.28**	.32**	.26**	.21**	.22**	.12	.31**	.34**	.15*	.35**	.17*
Numbing 3	.01	.13	.18*	.15*	.15*	.22**	.13	.12	.22**	.17*	.27**	.14*
Avoidance 1	.07	-.01	.02	.10	.08	.10	.10	-.03	-.03	.11	.08	.03
Avoidance 2	.15	.23**	.16*	.05	.10	.02	.13	.22**	.16*	.01	.15*	.02
Avoidance 3	.10	.13	.09	.03	.02	.05	.15	.18*	.09	.03	.12	.07
Dissociation 1	.06	-.05	.00	.29**	.08	.17*	-.02	.07	-.04	.32**	.19**	.08
Dissociation 2	.07	.22**	.23**	.20**	.25**	.18*	.05	.23**	.23**	.11	.29**	.09
Dissociation 3	-.09	.19*	.11	.03	.17*	.09	-.03	.19*	.20**	.07	.22**	.08
Intrusion 1	.06	.12	.17*	.22**	.03	.14	.10	.19*	.13	.23**	.21**	.16*
Intrusion 2	.15	.23**	.21**	.31**	.24**	.20**	.15	.19*	.18*	.13*	.33**	.11
Intrusion 3 ^b	.05	.19*	.18*	.07	.17*	.11	.14	.26**	.26**	.10	.27**	.10
Hyperarousal 1	.11	.11	.11	.26**	.08	.14	.15*	.19*	.09	.20**	.19**	.09
Hyperarousal 2	.17*	.29**	.17*	.23**	.20**	.13	.19*	.20*	.19*	.11	.26**	.06
Hyperarousal 3	-.06	.18*	.14	.11	.11	.21**	.08	.18*	.19*	.03	.21**	.09
<i>M</i>	.37	.31	.31	.00	.00	.00	.16	.17	.17	.19	.21	.24
<i>SD</i>	.31	.32	.30	.58	.58	.57	.21	.22	.20	.42	.40	.40

Note: 1, 2, and 3 refer to the year of measurement. (p) = parent-report. (c) = child-report. *M* = mean. *SD* = standard deviation. Agg = aggression. Del = delinquency. PTSS = total posttraumatic stress symptoms.

^a standardized variable. ^b log transformed variable.

* $p < .05$. ** $p < .01$.

In terms of the PTSS clusters, year 1 numbing was significantly and positively associated with child-reported aggression for years 1 and 3 and delinquency for years 1 and 2. Year 2 numbing was significantly and positively associated with parent- and child-reported aggression and delinquency for years 2 and 3. Year 3 numbing was also significantly and positively associated with parent- and child-reported aggression and delinquency for the same year.

Year 1 avoidance was not significantly associated with any of the externalizing outcomes. However, year 2 avoidance was significantly and positively associated with parent-reported aggression and delinquency for years 2 and 3 and child-reported delinquency for year 2. Year 3 avoidance was not significantly associated with any of the externalizing outcomes for the same year.

Year 1 dissociation was significantly and positively associated with child-reported aggression for years 1 and 3 and delinquency for years 1 and 2. Year 2 dissociation was significantly and positively associated with parent- and child-reported aggression for years 2 and 3, parent-reported delinquency for years 2 and 3, and child-reported delinquency for year 2. Year 3 dissociation was significantly and positively associated with parent-reported delinquency for the same year.

Year 1 intrusion was significantly and positively associated with parent-reported aggression for year 3 and delinquency for year 2, and child-reported aggression for year 1 and delinquency for all three years. Year 2 intrusion was significantly and positively associated with parent- and child-reported aggression for years 2 and 3, parent-reported delinquency for years 2 and 3, and child-reported delinquency for year 2. Year 3 intrusion

was significantly and positively associated with parent-reported aggression and delinquency for the same year.

Year 1 hyperarousal was significantly and positively associated with parent-reported delinquency for years 1 and 2, and child-reported aggression for year 1 and delinquency for years 1 and 2. Year 2 hyperarousal was significantly and positively associated with parent-reported aggression and delinquency for years 2 and 3, and child-reported aggression and delinquency for year 2. Year 3 hyperarousal was significantly and positively associated with parent-reported delinquency and child-reported aggression for the same year.

The correlations between the control and dependent variables are presented in Table 4 (next page). Exposure to violence, via witnessing or victimization, was significantly associated with several externalizing outcomes and was retained as a control variable in regression analyses. Given that family income had limited significant associations with the externalizing outcomes, it was not used as a control variable in regression analyses.

Regression Analyses

A series of hierarchical simultaneous multiple regression analyses were conducted to examine the cross-sectional and longitudinal data with one predictor (total PTSS) and four outcomes (parent- and child-reported aggression and delinquency). In a second series of multiple regression analyses, five predictors (numbing, avoidance, dissociation, intrusion, and hyperarousal) and four outcomes (parent- and child-reported aggression and delinquency) were examined. Each series was conducted twice for each cross-

Table 4. Means, Standard Deviations, and Correlations between Control and Dependent Variables (N = 125 – 267)

Variables	Agg1 (p)	Agg2 (p)	Agg3 (p)	Agg1 (c) ^a	Agg2 (c) ^a	Agg3 (c) ^a	Del1 (p)	Del2 (p)	Del3 (p)	Del1 (c) ^b	Del2 (c) ^b	Del3 (c) ^b	M	SD
EV Witness 1	.16*	.12	.15	.16*	.09	.20**	.00	.18*	.12	.08	.13	.22**	.29	.35
EV Witness 2 ^b	.00	-.04	-.02	.12	.16*	.24**	-.02	-.01	-.09	.06	.17**	.22**	.21	.33
EV Witness 3	.03	.11	.10	.08	.12	.29**	-.01	.06	.07	-.01	.16*	.31**	.25	.36
EV Victim 1 ^b	.08	.06	.08	.15*	.06	.13	-.01	.08	-.01	.12	.12	.17*	.14	.28
EV Victim 2 ^b	-.01	-.03	-.06	.06	.21**	.16*	.01	-.01	-.09	.07	.17**	.14*	.09	.18
EV Victim 3 ^b	-.01	.09	.00	.08	.18*	.18**	.00	.04	.01	.07	.27**	.23**	.08	.18
Income 1	.02	-.03	.01	.11	-.01	.06	-.04	-.07	-.06	.06	.02	.16*	20796	17231
Income 2	-.05	-.05	-.01	-.04	-.04	-.07	-.12	-.02	-.06	.04	.04	.04	20415	17085
Income 3	-.04	-.03	.08	-.17*	-.06	.04	-.10	-.10	-.01	-.05	.03	.06	19253	19049
M	.37	.31	.31	.00	.00	.00	.16	.17	.17	.19	.21	.24		
SD	.31	.32	.30	.58	.58	.57	.21	.22	.20	.42	.40	.40		

Note: 1, 2, and 3 refer to the year of measurement. (p) = parent-report. (c) = child-report. M = mean. SD = standard deviation. Agg = aggression. Del = delinquency. EV Witness = witnessing violence. EV Victim = victim of violence. Income = annual family income.

^a standardized variable. ^b standardized variable.

* $p < .05$. ** $p < .01$.

sectional and longitudinal analysis, once with exposure to violence (witnessing and victimization separately) controlled and once without. To examine the four outcomes in this manner with the six predictors, a total of 48 cross-sectional and 48 longitudinal regression equations were tested.

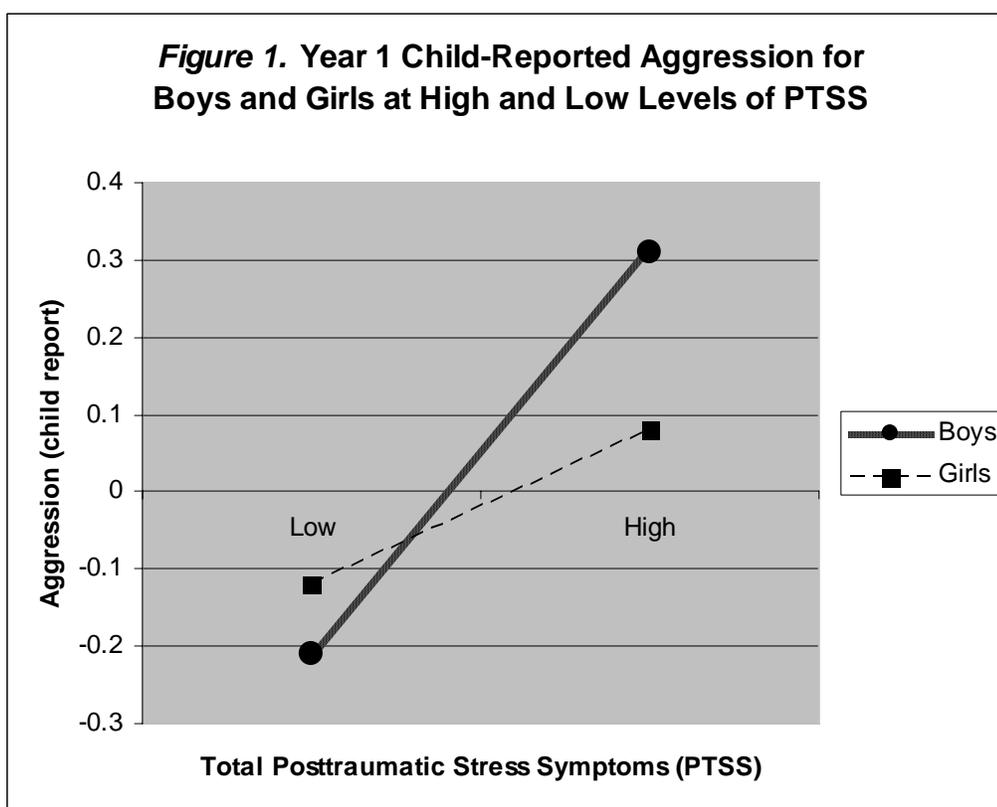
A stepwise approach was taken to order of entry, with control variables in Step 1 (i.e., gender, exposure to violence, baseline outcome), main effects in Step 2, and two-way interactions in Step 3. In the first series of analyses, total PTSS was entered in Step 2. In the second series, the five PTSS subscales were entered in Step 2. In Step 3 of all the regression analyses, the interactions with gender were entered, but only six significant cross-sectional interactions were plotted and probed according to the procedures outlined by Aiken and West (1991). Refer to Appendix G for the structure of the hierarchical regression models in this study.

Cross-sectional Regression Analyses

Aggression

For year 1, neither total PTSS nor the five individual PTSS clusters accounted for significant variance in parent-reported aggression over and above gender or exposure to violence. However, total PTSS significantly accounted for 7% and 6% of the variance in child-reported aggression over and above gender and exposure to violence, respectively. The individual PTSS clusters block of variables also significantly explained 11% and 9% of the variance in child-reported aggression over and above gender and exposure to violence, respectively. Total PTSS significantly predicted more child-reported aggression with and without exposure to violence controlled, $\beta = .25, p < .001$ and $\beta = .31, p < .001$,

respectively. Additionally, regression analyses revealed a significant two-way interaction only without exposure to violence controlled. The two-way interaction between total PTSS and gender revealed that higher total PTSS were associated with more aggression among boys, $t(1, 100) = 4.12, p < .001$, than among girls, $t(1, 141) = 2.25, p < .05$ (see Figure 1 below). When the PTSS clusters were examined, numbing and dissociation significantly predicted more child-reported aggression only without exposure to violence in the model, $\beta = .18, p < .05$ and $\beta = .18, p = .05$, respectively (see Table 5 next page).



Note. Child-reported aggression is a standardized variable.

For year 2, total PTSS significantly accounted for 7% and 9% of the variance in parent-reported aggression over and above gender and exposure to violence, respectively. The individual PTSS clusters block of variables also significantly explained 10% and

Table 5. Cross-Sectional Regression Summaries for Year 1 Child-Reported Aggression

Variable	β	B	SE	R ² Change
<i>(N = 245)</i>				
Gender	.06	.04	.04	.00
Total PTSS	.31***	.40	.08	.07***
Adj R ² Total				.07***
<i>(N = 242)</i>				
Gender	.04	.02	.04	
EV Witness	.09	.14	.13	
EV Victim	.04	.29	.56	.03
Total PTSS	.25***	.32	.08	.06***
Adj R ² Total				.07***
<i>(N = 244)</i>				
Gender	.00	.00	.04	.00
Numbing	.18*	.24	.11	
Avoidance	-.12	-.10	.07	
Dissociation	.18*	.20	.10	
Intrusion	-.10	-.11	.13	
Hyperarousal	.19	.22	.13	.11**
Adj R ² Total				.09***
<i>(N = 242)</i>				
Gender	.00	.00	.04	
EV Witness	.08	.13	.12	
EV Victim	.02	.18	.56	.03
Numbing	.17	.22	.12	
Avoidance	-.11	-.09	.07	
Dissociation	.17	.20	.10	
Intrusion	-.07	-.07	.14	
Hyperarousal	.15	.16	.14	.09***
Adj R ² Total				.09***

Note. EV = exposure to violence.

* $p < .05$. ** $p < .01$. *** $p < .001$.

11% of the variance in parent-reported aggression over and above gender and exposure to violence, respectively. Total PTSS significantly predicted more parent-reported aggression with and without exposure to violence controlled, $\beta = .30$, $p < .001$ and $\beta = .27$, $p < .001$, respectively. No main effects predicting parent-reported aggression from

the individual PTSS clusters emerged (see Table 6 below).

Table 6. Cross-Sectional Regression Summaries for Year 2 Parent-Reported Aggression

Variable	β	B	SE	R ² Change
<i>(N = 163)</i>				
Gender	-.08	-.03	.03	.01
Total PTSS	.27***	.21	.06	.07***
Adj R ² Total				.07***
<i>(N = 156)</i>				
Gender	-.08	-.03	.03	
EV Witness	-.11	-.37	.34	
EV Victim	.02	.09	.54	.01
Total PTSS	.30***			.09***
Adj R ² Total				.08**
<i>(N = 163)</i>				
Gender	-.06	-.02	.03	.01
Numbing	.23	.17	.09	
Avoidance	.06	.03	.06	
Dissociation	.02	.01	.08	
Intrusion	-.25	-.17	.13	
Hyperarousal	.28	.22	.12	.10**
Adj R ² Total				.08**
<i>(N = 156)</i>				
Gender	-.06	-.02	.03	
EV Witness	-.08	-.27	.35	
EV Victim	-.01	-.03	.55	.01
Numbing	.16	.12	.10	
Avoidance	.05	.02	.06	
Dissociation	.01	.01	.08	
Intrusion	-.16	-.11	.13	
Hyperarousal	.30	.23	.12	.11**
Adj R ² Total				.07*

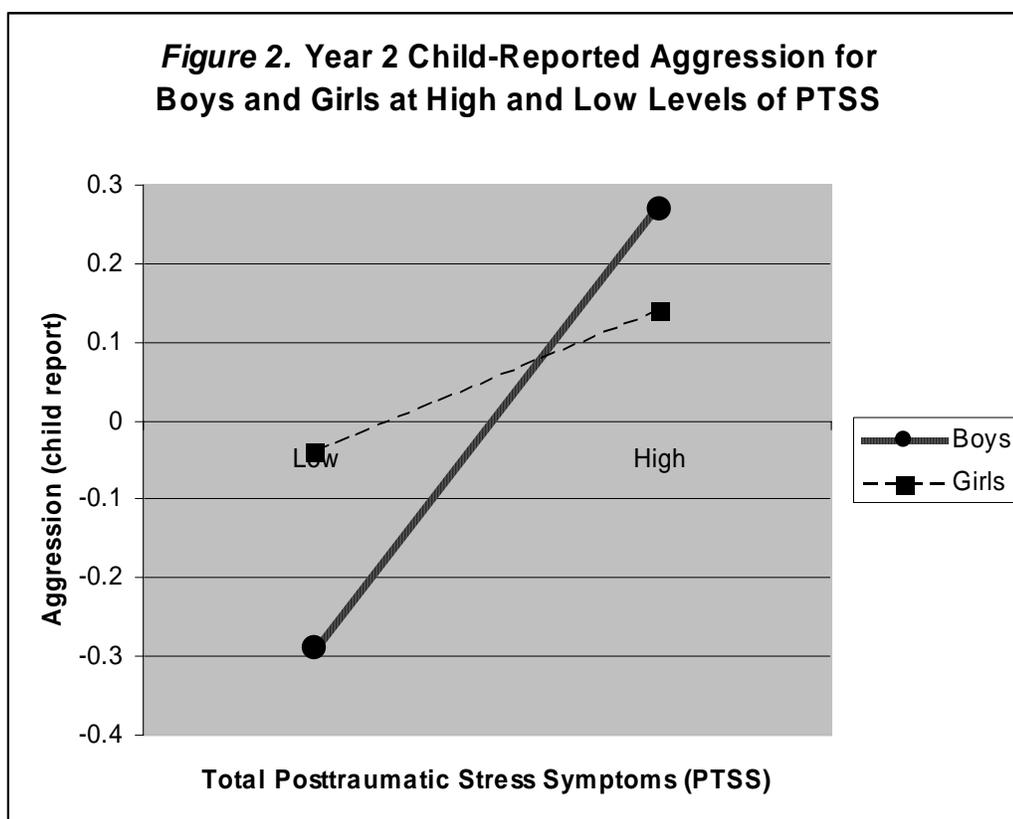
Note. EV = exposure to violence.

* $p < .05$. ** $p < .01$. *** $p < .001$.

For year 2, total PTSS significantly accounted for 6% and 5% of the variance in child-reported aggression over and above gender and exposure to violence, respectively.

The individual PTSS clusters block of variables also significantly explained 7% and 6%

of the variance in child-reported aggression over and above gender and exposure to violence, respectively. Total PTSS significantly predicted more child-reported aggression with and without exposure to violence controlled, $\beta = .29, p < .001$ and $\beta = .24, p < .001$, respectively. Additionally, regression analyses revealed a significant two-way interaction only with exposure to violence controlled. The two-way interaction between total PTSS and gender revealed that higher total PTSS were associated with more aggression for boys $t(3, 90) = 3.80, p < .001$, but not for girls, $t(3, 130) = 1.86, p = .07$ (see Figure 2 below). When the PTSS clusters were examined, no significant main effects emerged (see Table 7 next page).



Note. Child-reported aggression is a standardized variable.

Table 7. Cross-Sectional Regression Summaries for Year 2 Child-Reported Aggression

Variable	β	B	SE	R ² Change
<i>(N = 241)</i>				
Gender	-.07	-.04	.04	.01
Total PTSS	.24***	.38	.09	.06***
Adj R ² Total				.06***
<i>(N = 228)</i>				
Gender	-.05	-.03	.04	
EV Witness	.02	.13	.48	
EV Victim	.13	1.30	.78	.05*
Total PTSS	.29***	.42	.11	.05***
Adj R ² Total				.09***
<i>(N = 241)</i>				
Gender	-.09	-.05	.04	.01
Numbing	.09	.13	.13	
Avoidance	-.06	-.05	.07	
Dissociation	.16	.18	.12	
Intrusion	.08	.10	.17	
Hyperarousal	-.01	-.01	.16	.07**
Adj R ² Total				.08**
<i>(N = 228)</i>				
Gender	-.10	-.06	.04	
EV Witness	.01	.06	.50	
EV Victim	.16	1.57	.80	.05*
Numbing	.08	.12	.14	
Avoidance	-.03	-.03	.07	
Dissociation	.20	.23	.13	
Intrusion	.04	.05	.17	
Hyperarousal	-.04	-.05	.16	.06*
Adj R ² Total				.08***

Note. EV = exposure to violence.

* $p < .05$. ** $p < .01$. *** $p < .001$.

For year 3, total PTSS significantly accounted for 3% of the variance in parent-reported aggression over and above gender, but not exposure to violence. The individual PTSS clusters block of variables did not explain a significant proportion of the variance in parent-reported aggression over and above gender or exposure to violence. Total PTSS

significantly predicted more parent-reported aggression only without exposure to violence controlled, $\beta = .16$, $p < .05$. No main effects predicting parent-reported aggression from the individual PTSS clusters emerged (see Table 8 below).

Table 8. Cross-Sectional Regression Summary for Year 3 Parent-Reported Aggression (N = 179)

Variable	β	B	SE	R ² change
Gender	-.03	-.01	.02	.00
Total PTSS	.16*	.18	.08	.03*
Adj R ² Total				.02

* $p < .05$.

For year 3, total PTSS significantly accounted for 3% of the variance in child-reported aggression over and above gender, but not over and above exposure to violence. The individual PTSS clusters block of variables also significantly explained 7% of the variance in child-reported aggression over and above gender, but not over and above exposure to violence. Total PTSS significantly predicted more child-reported aggression only without exposure to violence controlled, $\beta = .16$, $p < .05$. Similarly, numbing and hyperarousal significantly predicted more child-reported aggression only without exposure to violence controlled, $\beta = .18$, $p = .05$ and $\beta = .28$, $p < .05$, respectively. Witnessing violence significantly predicted more child-reported aggression in both the total PTSS and PTSS cluster models, $\beta = .25$, $p < .01$ (see Table 9 next page).

Delinquency

For year 1, neither total PTSS nor the five individual PTSS clusters accounted for significant variance in parent-reported delinquency over and above gender or exposure to violence. There were also no main effects. However, regression analyses revealed a significant two-way interaction between hyperarousal and gender only with exposure to

Table 9. Cross-Sectional Regression Summaries for Year 3 Child-Reported Aggression

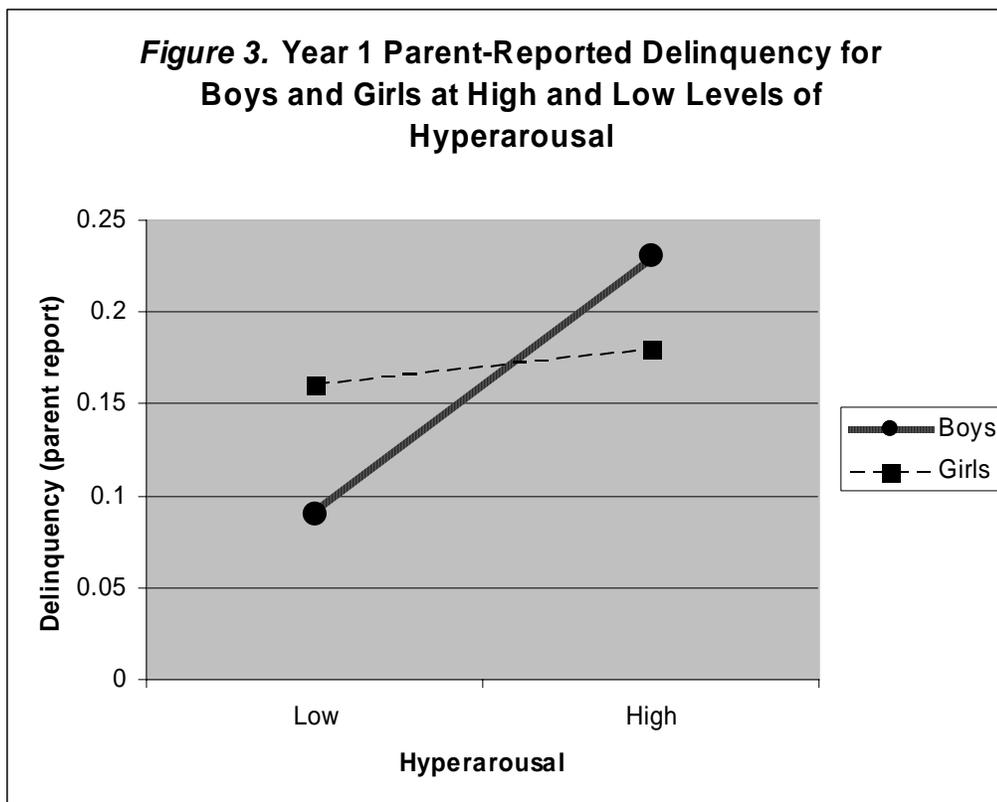
Variable	β	B	SE	R ² Change
<i>(N = 213)</i>				
Gender	-.03	-.02	.04	.00
Total PTSS	.16*	.34	.15	.03*
Adj R ² Total				.02
<i>(N = 208)</i>				
Gender	-.01	-.01	.04	
EV Witness	.25**	.39	.13	
EV Victim	.02	.23	.80	.08***
Total PTSS	.07	.15	.15	.00
Adj R ² Total				.07***
<i>(N = 213)</i>				
Gender	.01	.01	.04	.00
Numbing	.18*	.39	.20	
Avoidance	-.06	-.06	.08	
Dissociation	-.07	-.11	.14	
Intrusion	-.13	-.95	.90	
Hyperarousal	.28*	.45	.19	.07**
Adj R ² Total				.05*
<i>(N = 242)</i>				
Gender	.03	.02	.04	
EV Witness	.25**	.38	.13	
EV Victim	.01	.12	.80	.08***
Numbing	.15	.33	.20	
Avoidance	-.12	-.11	.08	
Dissociation	-.07	-.10	.14	
Intrusion	-.11	-.85	.88	
Hyperarousal	.22	.35	.19	.05
Adj R ² Total				.09***

Note. EV = exposure to violence.

* $p < .05$. ** $p < .01$. *** $p < .001$.

violence controlled. This interaction revealed that more hyperarousal was associated with greater delinquency for boys $t(3, 76) = 3.09, p < .01$, but not for girls, $t(3, 102) = 0.60, p = .55$ (see Figure 3 next page).

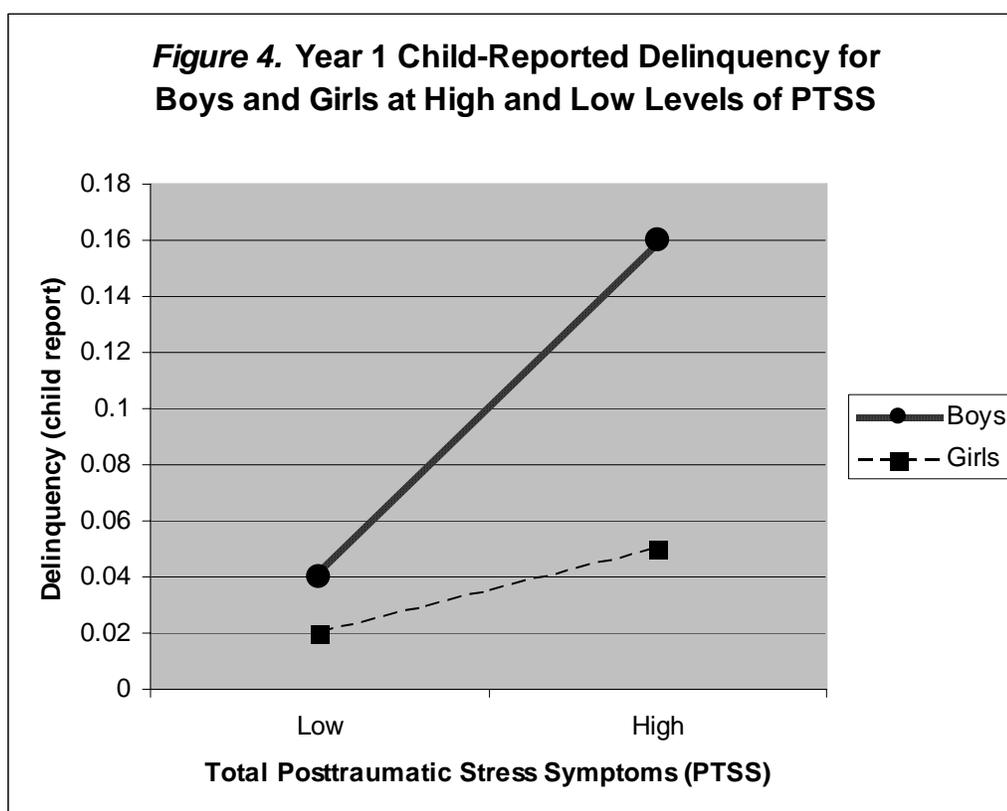
For year 1, total PTSS significantly accounted for 9% and 8% of the variance in



Note. Parent-reported delinquency is a log transformed variable.

child-reported delinquency over and above gender and exposure to violence, respectively. The individual PTSS clusters block of variables also significantly explained 11% and 10% of the variance in child-reported delinquency over and above gender and exposure to violence, respectively. Total PTSS significantly predicted more child-reported delinquency with and without exposure to violence controlled, $\beta = .36, p < .001$ and $\beta = .37, p < .001$, respectively. There was also a significant main effect of gender such that boys reported more delinquency than girls with and without exposure to violence controlled, $\beta = .30, p < .001$. Additionally, regression analyses revealed a significant two-way interaction with and without exposure to violence controlled. The two-way interaction between total PTSS and gender revealed that higher total PTSS were

associated with more delinquency for boys, $t(3, 101) = 3.94, p < .001$, than for girls, $t(3, 150) = 3.03, p < .01$, with exposure to violence controlled (see Figure 4 below). When the PTSS clusters were examined, numbing significantly predicted more child-reported delinquency with and without exposure to violence controlled, $\beta = .19, p < .05$ and $\beta = .17, p < .05$, respectively. As in the total PTSS model, boys reported significantly more delinquency than girls with and without exposure to violence controlled, $\beta = .25, p < .001$ and $\beta = .26, p < .001$, respectively (see Table 10 next page).



Note. Child-reported delinquency is a log transformed variable.

For year 2, total PTSS significantly accounted for 7% of the variance in parent-reported delinquency over and above gender and exposure to violence. The individual PTSS clusters block of variables also significantly explained 11% and 9% of the variance

Table 10. Cross-Sectional Regression Summaries for Year 1 Child-Reported Delinquency

Variable	β	B	SE	R ² Change
<i>(N = 263)</i>				
Gender	.30***	.03	.01	.06***
Total PTSS	.37***	.08	.01	.09***
Adj R ² Total				.17***
<i>(N = 259)</i>				
Gender	.30***	.03	.01	
EV Witness	-.01	.00	.02	
EV Victim	.04	.05	.10	.08***
Total PTSS	.36***	.08	.02	.08***
Adj R ² Total				.16***
<i>(N = 262)</i>				
Gender	.26***	.03	.01	.06***
Numbing	.17*	.04	.02	
Avoidance	-.03	.00	.01	
Dissociation	.13	.03	.02	
Intrusion	.09	.02	.02	
Hyperarousal	-.01	.00	.02	.11***
Adj R ² Total				.14***
<i>(N = 259)</i>				
Gender	.25***	.03	.01	
EV Witness	-.02	-.01	.02	
EV Victim	.08	.10	.10	.08***
Numbing	.19*	.05	.02	
Avoidance	-.04	-.01	.01	
Dissociation	.13	.03	.02	
Intrusion	.07	.01	.02	
Hyperarousal	.00	.00	.02	.10***
Adj R ² Total				.15***

Note. EV = exposure to violence.

* $p < .05$. ** $p < .01$. *** $p < .001$.

in parent-reported delinquency over and above gender and exposure to violence, respectively. Total PTSS significantly predicted more parent-reported delinquency with and without exposure to violence controlled, $\beta = .27$, $p = .001$ and $\beta = .26$, $p = .001$, respectively. When the PTSS clusters were examined, numbing significantly predicted

more parent-reported delinquency only without exposure to violence controlled, $\beta = .33$, $p < .01$ (see Table 11 below).

Table 11. Cross-Sectional Regression Summaries for Year 2 Parent-Reported Delinquency

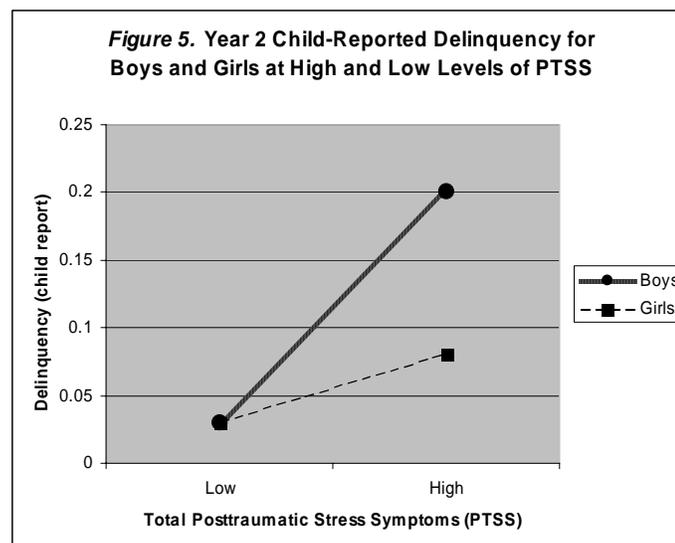
Variable	β	B	SE	R ² Change
<i>(N = 162)</i>				
Gender	.05	.01	.02	.00
Total PTSS	.26***	.15	.04	.07***
Adj R ² Total				.06**
<i>(N = 156)</i>				
Gender	.08	.02	.02	
EV Witness	-.05	-.12	.23	
EV Victim	-.01	-.04	.37	.00
Total PTSS	.27***	.14	.04	.07***
Adj R ² Total				.05*
<i>(N = 162)</i>				
Gender	.04	.01	.02	.00
Numbing	.33**	.18	.07	
Avoidance	.11	.04	.04	
Dissociation	.08	.03	.06	
Intrusion	-.26	-.12	.09	
Hyperarousal	.08	.05	.08	.11**
Adj R ² Total				.08**
<i>(N = 156)</i>				
Gender	.07	.02	.02	
EV Witness	-.04	-.10	.24	
EV Victim	-.02	-.08	.38	.00
Numbing	.25	.13	.07	
Avoidance	.07	.02	.04	
Dissociation	.04	.02	.06	
Intrusion	-.13	-.06	.09	
Hyperarousal	.11	.06	.08	.09*
Adj R ² Total				.04

Note. EV = exposure to violence.

* $p < .05$. ** $p < .01$. *** $p < .001$.

For year 2, total PTSS significantly accounted for 13% and 12% of the variance in child-reported delinquency over and above gender and exposure to violence, respectively.

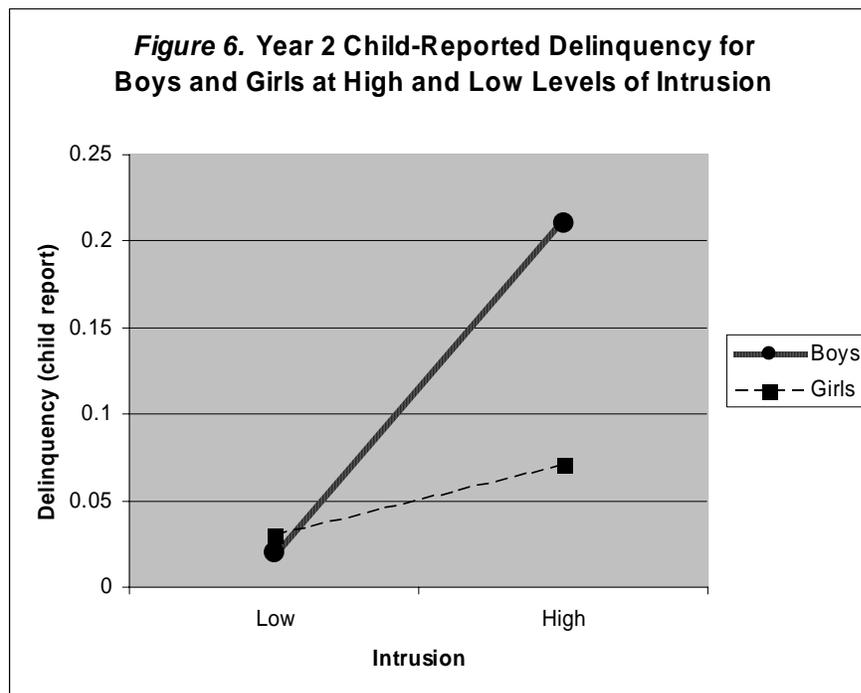
The individual PTSS clusters block of variables also significantly explained 16% and 15% of the variance in child-reported delinquency over and above gender and exposure to violence, respectively. Total PTSS significantly predicted more child-reported delinquency with and without exposure to violence controlled, $\beta = .44, p < .001$ and $\beta = .42, p < .001$, respectively. There was also a significant main effect of gender such that boys reported more delinquency than girls with and without exposure to violence controlled, $\beta = .26, p < .001$ and $\beta = .24, p < .001$, respectively. Additionally, regression analyses revealed a significant two-way interaction with and without exposure to violence controlled. The two-way interaction between total PTSS and gender revealed that higher total PTSS were associated with more delinquency for boys, $t(3, 87) = 5.02, p < .001$, than for girls, $t(3, 127) = 3.53, p = .001$, with exposure to violence controlled (see Figure 5 below).



Note. Child-reported delinquency is a log transformed variable.

When the PTSS clusters were examined, numbing significantly predicted more child-reported delinquency with and without exposure to violence controlled, $\beta = .23, p <$

.05 and $\beta = .21$, $p < .05$, respectively. Intrusion also significantly predicted more child-reported delinquency with and without exposure to violence controlled, $\beta = .29$, $p < .05$ and $\beta = .32$, $p < .05$, respectively. As in the total PTSS model, boys reported significantly more delinquency than girls with and without exposure to violence controlled, $\beta = .25$, $p < .001$ and $\beta = .22$, $p < .001$, respectively (see Table 12 next page). Additionally, regression analyses revealed a significant two-way interaction with and without exposure to violence controlled. The two-way interaction between intrusion and gender revealed that higher intrusion was associated with more delinquency for boys, $t(3, 87) = 5.16$, $p < .001$, than for girls, $t(3, 127) = 3.12$, $p < .01$, with exposure to violence controlled (see Figure 6 below).



Note. Child-reported delinquency is a log transformed variable.

For year 3, total PTSS significantly accounted for 6% and 5% of the variance in parent-reported delinquency over and above gender and exposure to violence,

Table 12. Cross-Sectional Regression Summaries for Year 2 Child-Reported Delinquency

Variable	β	B	SE	R ² Change
<i>(N = 235)</i>				
Gender	.24***	.03	.01	.03**
Total PTSS	.42***	.12	.02	.13***
Adj R ² Total				.19***
<i>(N = 222)</i>				
Gender	.26***	.03	.01	
EV Witness	.09	.03	.02	
EV Victim	.02	.04	.14	.08***
Total PTSS	.44***	.13	.02	.12***
Adj R ² Total				.22***
<i>(N = 235)</i>				
Gender	.22***	.02	.01	.03**
Numbing	.21*	.06	.03	
Avoidance	-.12	-.02	.01	
Dissociation	.03	.01	.02	
Intrusion	.32*	.08	.04	
Hyperarousal	.01	.00	.03	.16***
Adj R ² Total				.20***
<i>(N = 222)</i>				
Gender	.25***	.03	.01	
EV Witness	.11	.12	.09	
EV Victim	.01	.01	.14	.08***
Numbing	.23*	.07	.03	
Avoidance	-.11	-.02	.01	
Dissociation	.03	.01	.02	
Intrusion	.29*	.08	.04	
Hyperarousal	.04	.01	.03	.15***
Adj R ² Total				.23***

Note. EV = exposure to violence.

* $p < .05$. ** $p < .01$. *** $p < .001$.

respectively. The individual PTSS clusters block of variables also significantly explained 9% of the variance in parent-reported delinquency over and above gender and exposure to violence. Total PTSS significantly predicted more parent-reported delinquency with and without exposure to violence controlled, $\beta = .24$, $p = .01$. When the PTSS clusters

were examined, intrusion significantly predicted more parent-reported delinquency with and without exposure to violence controlled, $\beta = .35, p < .05$ (see Table 13 next page).

For year 3, neither total PTSS nor the five individual PTSS clusters accounted for significant variance in child-reported delinquency over and above gender or exposure to violence. Furthermore, there were significant main effects of gender and witnessing violence in both the total PTSS and PTSS clusters models. Boys reported significantly more delinquency than girls only with exposure to violence controlled in both the total PTSS and PTSS clusters models, $\beta = .17, p < .05$ and $\beta = .15, p < .05$, respectively. Witnessing violence significantly predicted more delinquency in both models, $\beta = .32, p < .001$.

Refer to Table 14 on page 57 for a summary of cross-sectional results.

Table 13. Cross-Sectional Regression Summaries for Year 3 Parent-Reported Delinquency

Variable	β	B	SE	R ² Change
<i>(N = 179)</i>				
Gender	-.01	.00	.02	.00
Total PTSS	.24**	.17	.05	.06**
Adj R ² Total				.05**
<i>(N = 174)</i>				
Gender	-.01	.00	.02	
EV Witness	.03	.02	.05	
EV Victim	-.08	-.26	.32	.01
Total PTSS	.24**	.17	.06	.05**
Adj R ² Total				.04*
<i>(N = 179)</i>				
Gender	-.03	-.01	.02	.00
Numbing	.15	.11	.08	
Avoidance	-.14	-.05	.03	
Dissociation	.02	.01	.06	
Intrusion	.35*	.89	.35	
Hyperarousal	-.12	-.06	.07	.09**
Adj R ² Total				.06**
<i>(N = 174)</i>				
Gender	-.03	-.01	.02	
EV Witness	.03	.02	.05	
EV Victim	-.07	-.23	.32	.01
Numbing	.15	.11	.08	
Avoidance	-.15	-.05	.03	
Dissociation	.01	.01	.06	
Intrusion	.35*	.90	.36	
Hyperarousal	-.11	-.06	.08	.09**
Adj R ² Total				.05*

Note. EV = exposure to violence.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 14. Cross-sectional Significance Levels for Predictors and Interaction Terms with and without Exposure to Violence (EV) Controlled

Predictors	No EV	EV	Outcome	No EV	EV	Outcome	No EV	EV	Outcome	No EV	EV	Outcome
PTSS1												
GenderXPTSS1												
Numbing1		*								**	**	
Avoidance1		*								*	*	
Dissociation1		*										
Intrusion1			Year 1			Year 1			Year 1			Year 1
Hyperarousal1			Parent-reported			Child-reported			Parent-reported			Child-reported
GenderXNumbing1			Aggression			Aggression			Delinquency			Delinquency
GenderXAvoidance1												
GenderXDissociation1												
GenderXIntrusion1												
GenderXHyperarousal1								*				
PTSS2												
GenderXPTSS2												
Numbing2										**	**	
Avoidance2								**		*	*	
Dissociation2												
Intrusion2			Year 2			Year 2			Year 2			Year 2
Hyperarousal2			Parent-reported			Child-reported			Parent-reported			Child-reported
GenderXNumbing2			Aggression			Aggression			Delinquency			Delinquency
GenderXAvoidance2										*	*	
GenderXDissociation2												
GenderXIntrusion2										*	*	
GenderXHyperarousal2												
PTSS3												
GenderXPTSS3												
Numbing3												
Avoidance3												
Dissociation3												
Intrusion3												
Hyperarousal3												
GenderXNumbing3			Year 3			Year 3			Year 3			Year 3
GenderXAvoidance3			Parent-reported			Child-reported			Parent-reported			Child-reported
GenderXDissociation3			Aggression			Aggression			Delinquency			Delinquency
GenderXIntrusion3												
GenderXHyperarousal3												

Note. Shaded boxes indicate a significant main effect of witnessing violence.
 * p < .05. ** p < .01. *** p < .001

Longitudinal Regression Analyses

Given that the results from the longitudinal regression analyses were the same with and without exposure to violence controlled, only the results from analyses controlling exposure to violence are presented in this section.

Aggression

Neither year 1 total PTSS nor the five individual PTSS clusters accounted for significant variance in year 2 parent-reported aggression over and above year 1 parent-reported aggression, gender, and exposure to violence. However, year 1 dissociation significantly predicted decreases in year 2 parent-reported aggression, $\beta = -.23, p < .05$. This result should be considered with caution given that year 1 dissociation and year 2 parent-reported aggression were not significantly correlated ($r = -.05, p > .05$). Neither year 1 total PTSS nor the five individual PTSS clusters accounted for significant variance in year 2 child-reported aggression over and above year 1 child-reported aggression, gender, and exposure to violence.

Year 2 total PTSS significantly accounted for 3% of the variance in year 3 parent-reported aggression over and above year 2 parent-reported aggression, gender, and exposure to violence. The individual PTSS clusters block of variables did not account for significant variance in year 3 parent-reported aggression over and above year 2 parent-reported aggression, gender, and exposure to violence. Year 2 total PTSS significantly predicted increases in year 3 parent-reported aggression, $\beta = .19, p < .05$ (see Table 15 next page). Neither year 2 total PTSS nor the five individual PTSS clusters accounted for significant variance in year 3 child-reported aggression over and above year 2 child-

Table 15. Longitudinal Regression Summary for Predicting Year 3 Parent-Reported Aggression from Year 2 PTSS (N = 115)

Variable	β	B	SE	R ² change
Parent-Reported Aggression 2	.63***	.56	.06	
Gender	.01	.00	.02	
EV Witness 2	-.13	-.41	.25	
EV Victim 2	.10	.54	.43	.47***
Total PTSS 2	.19*	.14	.05	.03*
Adj R ² Total				.48***

Note. EV = exposure to violence. 2 = year of measurement.

* $p < .05$. ** $p < .01$. *** $p < .001$.

reported aggression, gender, and exposure to violence. Furthermore, witnessing violence significantly predicted increases in aggression for both the total PTSS and PTSS clusters models, $\beta = .15$, $p < .05$ and $\beta = .18$, $p < .05$, respectively.

Neither year 1 total PTSS nor the five individual PTSS clusters accounted for significant variance in year 3 parent-reported aggression over and above year 2 parent-reported aggression, gender, and year 1 exposure to violence. However, year 1 dissociation significantly predicted decreases in year 3 parent-reported aggression, $\beta = -.25$, $p < .05$. This result should be considered with caution given that year 1 dissociation and year 3 parent-reported aggression were not significantly correlated ($r = .00$, $p > .05$). Year 1 total PTSS significantly accounted for 2% of the variance in year 3 child-reported aggression over and above year 2 child-reported aggression, gender, and year 1 exposure to violence. The individual PTSS clusters block of variables did not account for significant variance in year 3 child-reported aggression over and above year 2 child-reported aggression, gender, and year 1 exposure to violence. Year 1 total PTSS significantly predicted increases in year 3 child-reported aggression, $\beta = .14$, $p < .05$ (see Table 16 next page). Year 1 numbing also significantly predicted increases in year 3

child-reported aggression, $\beta = .20, p < .05$.

Table 16. Longitudinal Regression Summary for Predicting Year 3 Child-Reported Aggression from Year 1 PTSS (N = 169)

Variable	β	B	SE	R ² change
Child-Reported Aggression 2	.49***	.49	.07	
Gender	-.03	-.02	.04	
EV Witness 1	.10	.15	.13	
EV Victim 1	-.04	-.30	.60	.27***
Total PTSS 1	.14*	.19	.09	.02*
Adj R ² Total				.27***

Note. EV = exposure to violence. 1 and 2 = year of measurement.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Delinquency

Neither year 1 total PTSS nor the five individual PTSS clusters accounted for significant variance in year 2 parent-reported delinquency over and above year 1 parent-reported delinquency, gender, and exposure to violence. However, year 1 avoidance significantly predicted decreases in year 2 parent-reported delinquency, $\beta = -.24, p < .05$. This result should be considered with caution given that year 1 avoidance and year 2 parent-reported delinquency were not significantly correlated ($r = -.03, p > .05$). Year 1 total PTSS significantly accounted for 2% of the variance in year 2 child-reported delinquency over and above year 1 child-reported delinquency, gender, and exposure to violence. The individual PTSS clusters block of variables did not account for significant variance in year 2 child-reported delinquency over and above year 1 child-reported delinquency, gender, and exposure to violence. Year 1 total PTSS significantly predicted increases in year 2 child-reported delinquency, $\beta = .15, p < .05$ (see Table 17 next page).

Year 2 total PTSS significantly accounted for 2% of the variance in year 3 parent-

Table 17. Longitudinal Regression Summary for Predicting Year 2 Child-Reported Delinquency from Year 1 PTSS (N = 205)

Variable	β	B	SE	R ² change
Child-Reported Delinquency 1	.42***	.49	.08	
Gender	.08	.01	.01	
EV Witness 1	.09	.03	.02	
EV Victim 1	-.02	-.03	.11	.24***
Total PTSS 1	.15*	.04	.02	.02*
Adj R ² Total				.24***

Note. EV = exposure to violence. 1 = year of measurement.

* $p < .05$. ** $p < .01$. *** $p < .001$.

reported delinquency over and above year 2 child-reported delinquency, gender, and exposure to violence. The individual PTSS clusters block of variables did not account for significant variance in year 3 parent-reported delinquency over and above year 2 child-reported delinquency, gender, and exposure to violence. Year 1 total PTSS significantly predicted increases in year 3 parent-reported delinquency, $\beta = .16$, $p < .05$. Year 2 witnessing violence significantly predicted decreases in year 3 parent-reported delinquency in both the total PTSS and PTSS clusters models, $\beta = -.18$, $p < .05$ and $\beta = -.19$, $p < .05$, respectively (see Table 18 on the next page). Neither year 2 total PTSS nor the five individual PTSS clusters accounted for significant variance in year 3 child-reported delinquency over and above year 2 child-reported delinquency, gender, and exposure to violence. However, year 2 numbing significantly predicted increases in year 3 child-reported delinquency, $\beta = .21$, $p < .05$. Contrary to the result for parent report, year 2 witnessing violence also significantly predicted increases in year 3 child-reported delinquency in only the PTSS cluster model, $\beta = .16$, $p < .05$.

Neither year 1 total PTSS nor the five individual PTSS clusters accounted for significant variance in year 3 parent-reported delinquency over and above year 2 parent-

Table 18. Longitudinal Regression Summary for Predicting Year 3 Parent-Reported Delinquency from Year 2 PTSS (N = 115)

Variable	β	B	SE	R ² change
Child-Reported Delinquency 2	.59***	.53	.07	
Gender	-.03	-.01	.02	
EV Witness 2	-.18*	-.42	.19	
EV Victim 2	.03	.11	.32	.41***
Total PTSS 2	.16*	.09	.04	.02*
Adj R ² Total				.41***

Note. EV = exposure to violence. 2 = year of measurement.

* $p < .05$. ** $p < .01$. *** $p < .001$.

reported delinquency, gender, and year 1 exposure to violence. However, year 1 dissociation significantly predicted decreases in year 3 parent-reported delinquency, $\beta = -.31$, $p < .05$. This result should be considered with caution given that year 1 dissociation and year 3 parent-reported delinquency were not significantly correlated ($r = -.04$, $p > .05$). Neither year 1 total PTSS nor the five individual PTSS clusters accounted for significant variance in year 3 child-reported delinquency over and above year 2 child-reported delinquency, gender, and year 1 exposure to violence. However, year 1 intrusion significantly predicted increases in year 3 child-reported delinquency, $\beta = .44$, $p < .01$.

Refer to Table 19 on the next page for a summary of longitudinal results.

Table 19. Longitudinal Significance Levels for Predictors and Interaction Terms with Exposure to Violence (EV) Controlled

Predictors	Outcome	Outcome	Outcome	Outcome
PTSS1				
GenderXPTSS1				
Numbing1				
Avoidance1				
Dissociation1				
Intrusion1				
Hyperarousal1				
GenderXNumbing1				
GenderXAvoidance1				
GenderXDissociation1				
GenderXIntrusion1				
GenderXHyperarousal1				
PTSS2				
GenderXPTSS2				
Numbing2				
Avoidance2				
Dissociation2				
Intrusion2				
Hyperarousal2				
GenderXNumbing2				
GenderXAvoidance2				
GenderXDissociation2				
GenderXIntrusion2				
GenderXHyperarousal2				
PTSS1				
GenderXPTSS1				
Numbing1				
Avoidance1				
Dissociation1				
Intrusion1				
Hyperarousal1				
GenderXNumbing1				
GenderXAvoidance1				
GenderXDissociation1				
GenderXIntrusion1				
GenderXHyperarousal1				

Note. Shaded boxes indicate a significant main effect of witnessing violence. (-) = -β.

* p < .05. ** p < .01. *** p < .001

CHAPTER FOUR

DISCUSSION

The broad purpose of this study was to investigate the associations between five posttraumatic stress symptom (PTSS) clusters (i.e., intrusion, dissociation, numbing, avoidance, and hyperarousal) and two forms of externalizing problems (i.e., aggression and delinquency) within and across the middle school years (i.e., 6th to 8th grade) in a low income urban sample of young adolescent African Americans. This study had two more specific goals. The first goal was to identify the specific PTSS clusters most predictive of externalizing problems during this period of development. The second goal was to explore how the relations between PTSS and externalizing problems may depend on gender.

Total PTSS and Externalizing Problems

The first goal of the present study was initially addressed by replicating previous research examining the relations between total PTSS scores and externalizing problems in samples of youth. Consistent with previous research that positively linked total PTSS scores and externalizing problems (e.g., Gellman & DeLucia-Waack, 2006; McCart et al., 2007; Wood et al., 2002), the present study found that more total PTSS significantly predicted more aggression and delinquency for as much as 75% of these outcomes within the 6th, 7th, and 8th grades. That is, total PTSS significantly predicted more parent-reported aggression and delinquency in 7th and 8th grade, child-reported aggression in all

grades, and child-reported delinquency in the 6th and 7th grades when exposure to violence was not considered. Furthermore, total PTSS also significantly explained between 3 and 13% of the variance in aggression and delinquency over and above gender. When exposure to violence was controlled, total PTSS still emerged as a significant positive predictor for more than 58% of the parent- and child-reported externalizing outcomes within the 6th, 7th, and 8th grades and significantly explained between 5 and 12% of the variance in these outcomes over and above both gender and exposure to violence.

The predictive link between total PTSS and externalizing problems was also supported longitudinally, but to a lesser degree. While controlling for gender, exposure to violence, and previous year aggression or delinquency, total PTSS significantly predicted increases in one-third of the externalizing outcomes across the middle school years and explained between 2 and 3% of the variance in these outcomes. That is, total PTSS in 6th grade significantly predicted increases in child-reported delinquency during the 7th grade and child-reported aggression during the 8th grade, while total PTSS in 7th grade predicted increases in parent-reported aggression and delinquency a year later. Although total PTSS had greater predictive power within as opposed to across the middle school years, the significant longitudinal relations reported here are still impressive given the considerable stability of externalizing behaviors over time (Hinshaw & Lee, 2003).

Specific PTSS Clusters and Externalizing Problems

The first goal of this study was further accomplished by moving beyond total PTSS scores to examining the five specific PTSS clusters of intrusion, dissociation,

numbing, avoidance, and hyperarousal and their predictive relations with externalizing outcomes within and across the middle school years. Similar to total PTSS, the five PTSS clusters explained a significant proportion of the variance in aggression and delinquency within the middle school years for a majority of these outcomes. Specifically, the PTSS clusters significantly explained between 6 and 16% of the variance in two-thirds of the externalizing outcomes within the middle school years when exposure to violence was not considered. After controlling for exposure to violence, the PTSS clusters ceased to be significant for only child-reported aggression in 8th grade. Similar to the results for total PTSS, the five PTSS clusters were less predictive across the middle school years. In fact, the five PTSS clusters did not explain a significant proportion of the variance in any of the externalizing outcomes across the middle school years.

The five PTSS clusters were not only significant in explaining the variance in externalizing outcomes within the middle school years, specific clusters also emerged as significant individual predictors of aggression and/or delinquency during this period. Numbing emerged as the most consistently significant predictor of aggression and delinquency among the five PTSS clusters during the middle school years. Within grades, numbing symptoms significantly and positively predicted two-thirds of child-reported externalizing outcomes (i.e., 6th and 8th grade aggression and delinquency in all grades) as well as parent-reported delinquency during 7th grade without exposure to violence controlled. Across the middle school years, numbing also significantly and positively predicted one-third of child-reported externalizing outcomes with exposure to violence controlled. That is, numbing symptoms during the 6th and 7th grades predicted increases

in 8th grade child-reported aggression and delinquency, respectively.

Numbing symptoms appear to be an important predictor of aggression and delinquency in African American youth during the middle school years. The present findings suggest that African American youth who show higher levels of not caring about what they used to care about, an inability to feel upset or happy when the situation calls for it, and thoughts of a foreshortened and negative future are particularly at risk of aggressive and delinquent behavior. In other words, flat affect and little hope for the future place low income African American youth living in urban high-crime neighborhoods at greater risk for acting out aggressively and engaging in delinquent behaviors like skipping school, damaging property, substance use, stealing, and run-ins with the law.

These results for numbing are both similar to and different from the findings of previous research with adults that examined the relation between combined avoidance/numbing symptoms and conduct problems. The results of the present study are consistent with previous reports of a positive relation between avoidance/numbing symptoms and substance use in women (Sullivan and Holt, 2008). However, they are inconsistent with previous research that found a negative relation between these symptoms and aggression in men (Taft et al., 2007). This pattern of similarities and differences with adult research findings suggests that numbing symptoms may operate differently in young African American adolescents compared to adults. Numbing symptoms may place these adolescents at risk for externalizing problems more generally, instead of delinquency specifically.

It is important to emphasize the issue of conceptualizing symptoms of numbing and avoidance as belonging to the same cluster. As noted above, the previous studies of adults combined avoidance and numbing symptoms, as does the DSM criteria for PTSD. As others have argued (e.g., Asmundson, Stapleton, & Taylor, 2004), the results of this study do not support this practice of combining avoidance and numbing symptoms. Two findings from the present study support the separation of avoidance and numbing symptoms. First, avoidance only significantly predicted one of the twenty-four externalizing outcomes examined in this study. Second, avoidance predicted this outcome in the direction opposite of that found for numbing. Specifically, avoidance symptoms in 6th grade significantly predicted decreases in parent-reported delinquency a year later.

In addition to providing evidence supporting the idea that avoidance and numbing are each a distinct cluster of symptoms, the significant result for avoidance may carry another implication. The present study found that African American youth who experienced higher levels of trying to avoid thoughts or reminders of a “scary” or “bad” experience in 6th grade, showed less parent-reported conduct problems a year later. This finding is consistent with previous research that has reported a protective function of avoidant coping in African American youth against the development of anxiety symptoms following exposure to violence (e.g., Edlynn, Gaylord-Harden, Richards, & Miller, 2008). The results of the present study suggest that subclinical symptoms of avoidance may also protect this population against engagement in delinquent behavior following exposure to violence.

The second most predictive PTSS cluster was dissociation. Although it had

limited predictive power within the middle school years (i.e., positively predicted only child-reported aggression during 6th grade without exposure to violence controlled), it significantly predicted decreases in half of the parent-reported externalizing outcomes across the middle school years with exposure to violence controlled. That is, symptoms of dissociation predicted decreases in parent-reported aggression during the 7th and 8th grades and decreases in parent-reported delinquency during the 8th grade. These findings suggest that African American youth who show higher levels of going away in their minds and trying not to think, pretending they are somewhere else, feeling like things aren't real, feeling like they are not in their bodies, and feeling like their minds are empty or blank may be less likely to act out aggressively or engage in delinquent behavior as reported by their parents.

These results carry interesting implications in light of their relation with previous research. On the one hand, these results are inconsistent with previous studies that implicate dissociation as a significant positive predictor of aggression (e.g., Fehon, Grilo, and Lipschitz, 2005; Moskowitz, 2004). However, it is important to note that these studies used clinical samples of violent youth. Perhaps, dissociation is a significant and positive contributor to aggression among youth in clinical and forensic settings who already display high levels of violent behavior.

On the other hand, the results of the present study largely replicate those reported by Kaplow et al. (2008). These authors used the same measure of parent-reported externalizing problems with a primarily African American youth sample of sexual abuse victims. They found that symptoms of dissociation during the first assessment period

significantly predicted lower CBCL total externalizing scale scores 8 to 36 months later. These authors suggested that dissociation may have a “buffering effect on the development of externalizing problems” (p.268). Contrary to expectations, the results of this study support their hypothesis with a larger community sample. It is noteworthy that the community sample of the present study produced findings similar to their clinical sample of youth exposed to severe traumatic experiences. Perhaps, dissociation provides African American youth with a means of escape from circumstances marked by poverty and crime.

The third most predictive cluster was intrusion. It significantly and positively predicted three of twenty-four externalizing outcomes during the middle school years with exposure to violence controlled. Within each school year, intrusion predicted more child-reported delinquency in 7th grade and more parent-reported delinquency in 8th grade. Across the middle school years, symptoms of intrusion in 6th grade predicted increases in child-reported delinquency during 8th grade. These findings suggest that African American youth who show higher levels of worrying about safety and reexperiencing a “scary” event through nightmares, cued memories, vivid thoughts and imagery, feelings, and physical symptoms of anxiety are at an increased risk of engaging in delinquent behavior. This positive link between intrusion and delinquency is consistent with research that suggests that PTSD sufferers may engage in delinquent behaviors to bolster their self-esteem and sense of connectedness (Margolin & Vickerman, 2007).

This exclusive relation between intrusion and delinquency also clarifies the results of previous research that collapsed aggression and delinquency into one total

externalizing variable. For example, previous studies reported that symptoms of reexperiencing positively predict general externalizing problems in preschoolers (Levendosky et al., 2002) as well as the development of Conduct Disorder in adolescents (Copeland et al., 2007). However, these studies failed to disentangle delinquency and aggression. Therefore, the results of the present study suggest that the findings of these studies may be the product of intrusion's exclusive predictive link to delinquency, not aggression. Although intrusion was the only PTSS cluster in this study with an exclusive link to only one type externalizing outcome (i.e., delinquency), it was a relatively weak predictor overall compared to numbing and dissociation.

Finally, and contrary to expectations, hyperarousal accompanied avoidance as a relatively weak predictor of aggression and delinquency. Like avoidance, hyperarousal significantly predicted only one of twenty-four externalizing outcomes during the middle school years. Specifically, hyperarousal in 8th grade predicted more child-reported aggression during the same year only without exposure to violence controlled. In other words, African American youth who showed higher levels of fright or anger, an exaggerated startle response, inattention, and trouble sleeping also showed higher levels of aggression, but only in 8th grade.

These results are inconsistent with previous research on the link between hyperarousal symptoms and conduct problems. At least for African American youth, these findings do not support conjectures that give symptoms of hyperarousal a particularly important role in increasing trauma victims' vulnerability to perpetrating violence (e.g., Lisak & Miller, 2003). These results are also generally inconsistent with

previous studies that found that hyperarousal positively predicted drug use in women (Sullivan and Holt, 2008) and alcohol problems and aggression in men (Taft et al., 2007). As may be the case with symptoms of numbing and avoidance, hyperarousal symptoms may operate differently in youth compared to adults, as well as in community compared to clinical or forensic samples.

Summary and Theoretical Considerations

Taken together, the results of this study carry important theoretical implications in light of their similarity with previous research. In general, the present findings support previous research reporting a significant and positive predictive relation between PTSS and externalizing problems in African American youth (e.g., Gellman & DeLucia-Waack, 2006; McCart et al., 2007; Wood et al., 2002). These results are impressive given that they held for a majority of outcomes even after youth's gender and exposure to violence were controlled. This fact supports the PTSS hypothesis, the idea that PTSS play a mediational role in the association between exposure to violence and externalizing outcomes (e.g., Wolfe, Wekerle et al., 2004). It also supports the view that PTSS precedes (e.g., Margolin & Vickerman, 2007; Wekerle et al., 2001) rather than follows (e.g., Chilcoat & Breslau, 1998) externalizing problems. However, it is important to acknowledge that the positive link between PTSS and externalizing problems was much stronger within the middle school years than across them. This result may be due to the considerable stability of externalizing problems over time.

Although total PTSS was a more consistent and positive predictor of African American youth's externalizing problems than any one individual PTSS cluster, the

results of this study do support the examination of PTSS clusters beyond the overall total PTSS score. Numbing emerged as the most consistent positive predictor of child-reported aggression and delinquency both within and across the middle school years, while dissociation emerged as a notable negative predictor of these outcomes across grades based on parent report. Intrusion was the only PTSS cluster with an exclusive relation with only one type of externalizing outcome, delinquency, but it was a much weaker positive predictor overall compared to numbing symptoms. It is also important to note that examining PTSS clusters individually generally increased unique explanatory power within school years. At the very least, the findings of this study suggest that PTSS are potentially important factors to consider with respect to externalizing problems in African American youth. Furthermore, these youth do not need to meet full diagnostic criteria for PTSD to show this link.

The findings of this study are consistent with theoretical explanations of the link between childhood trauma and externalizing problems. A prominent social cognitive theory advanced by Dodge and colleagues posits that traumatic experiences lead to aggression when children process social information in four distinct ways: these children 1) exclusively focus on negative social cues, 2) ignore positive information, 3) limit themselves to aggressive behavior in response to arousing situations, and 4) believe aggression is a successful strategy (Garbarino, 2008). These characteristics are seen in what Garbarino (2008) calls a *war zone mentality* which some children develop in response to growing up in *socially toxic environments*, environments that pose serious threats to a child's psychological and spiritual well being. The war zone mentality

consists of viewing the world through a negative filter and as “the perception of threat increases (so to does) the defensive inclination to hit first and ask questions later” (p.45). Basically, the child responds aggressively as a means of protection in an exceedingly threatening world.

PTSS may reflect these social cognitive biases and the war zone mentality. The PTSS clusters of intrusion and hyperarousal seem particularly consistent with the bias toward negative social information. Intrusion is marked by repeated intrusive thoughts, memories, or images of the traumatic event as if reexperiencing it, while hyperarousal consists of excessive negative affect, hypervigilance to threat, and a heightened startle response. Children in the throws of these symptoms may experience the world as a scary place that makes them feel angry and upset and that requires them to remain alert and react quickly to defend themselves against threats that lurk around every corner.

Another PTSS cluster, numbing, is consistent with both the negative bias as well as the view that traumatized aggressive children ignore positive social information. Numbing is characterized by an inability to feel and an exceedingly gloomy outlook for the future. Children experiencing this cluster of symptoms are apathetic and don't expect to have long, happy lives. They are emotionally detached from a world that seems to hold little promise of anything good. Consistent with these expectations, these children may stop looking for positive aspects of their experience. Resorting to externalizing behaviors may be attractive when children feel nothing and think they have nothing to lose since they believe that no bright future awaits them. As Garbarino (1999) puts it, this “terminal thinking is a major impediment to everything positive we would want teenagers to do,

because almost everything depends upon their having a future orientation” (p.118).

Interestingly, these PTSS clusters also reflect emotional extremes, with excessive reactivity and negative affect on one end, and excessive emotional detachment on the other (Margolin & Vickerman, 2007). This affect dysregulation may increase the traumatized child’s vulnerability for poor impulse control (Margolin & Vickerman, 2007). Paired with social cognitive deficits, this emotional vulnerability toward poor impulse control may create a potentially potent risk for externalizing. PTSS consists of both these emotional and cognitive features, and therefore, may represent an important factor in the link between the experience of traumatic events and conduct problems.

The Impact of Exposure to Violence

Before discussing the second goal of this study, it is important to address the impact of exposure to violence on the relation between PTSS and externalizing outcomes for African American youth. Controlling for both witnessing violence and being victimized by violence attenuated the results found within middle school years in some cases. Specifically, total PTSS no longer significantly predicted parent- and child-reported aggression in 8th grade after exposure to violence was controlled. The PTSS clusters also no longer significantly predicted four externalizing outcomes after exposure to violence was controlled.

Furthermore, several significant main effects of witnessing violence were found. Within the middle school years, witnessing violence significantly predicted more child-reported aggression and delinquency during 8th grade. Across the middle school years, witnessing violence in 7th grade significantly predicted increases in child-reported

aggression and delinquency a year later. These results indicate that exposure to violence may have a more direct effect on the externalizing problems of African American youth in some cases (Whitfield, 2004a, 2004b). Furthermore, the present study suggests that this effect may be particularly pronounced in 8th grade.

The potentially greater impact of exposure to violence on externalizing problems during adolescence compared to previous developmental periods has been supported by recent research studies. For example, a recent meta-analysis of the effects of exposure to community violence on mental health found a stronger relation between externalizing and exposure for adolescents compared to children (Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009). Similarly, a recent study, not included in the meta-analysis, found that exposure to violence was associated with increased risk of running away, dropping out of school, and entering the criminal justice system in later adolescence (Haynie, Petts, Maimon, & Piquero, 2009). Having accumulated more experiences with exposure to violence than children, adolescents may be particularly at risk of imitating and normalizing the antisocial behaviors to which they have been repeatedly exposed (Folwer et al., 2009).

Gender as Moderator of the PTSS-Externalizing Link

The second goal of this study, exploring how the relations between PTSS and externalizing problems may differ by gender, was addressed by conducting moderational analyses of the relation between PTSS and externalizing problems by gender. This goal presented new and exciting territory as previous studies lacked relevant gender analyses because they either controlled for gender in analyses (e.g., Saigh et al., 2002), did not

analyze the effects of gender (e.g., Levendosky et al., 2002), found no gender differences (e.g., Ortiz et al., 2008), or analyzed exclusively female (e.g., Lipschitz et al., 2000) or male (e.g., Gellman & DeLucia-Wack, 2006) samples. Interestingly, the present study found several consistent moderation effects by gender within the middle school years.

Six moderation effects by gender were found in this study. Each suggested that the relation between PTSS and externalizing problems may be significantly stronger for low income African American boys than African American girls from the same economic circumstances. During the 6th and 7th grades, total PTSS predicted more child-reported aggression and delinquency for boys than girls. Additionally, hyperarousal symptoms were associated with greater parent-reported delinquency for boys, but not girls, in 6th grade. In 7th grade, symptoms of intrusion were associated with more child-reported delinquency for boys than for girls. These results lend further support to the importance of assessing PTSS in relation to behavioral problems in youth, particularly for low income African American boys.

These moderation effects by gender are also particularly interesting in light of the gender differences in the prevalence rates of trauma exposure, PTSD, and disruptive behavior problems. In general, males are more likely to experience traumatic events, while females are more likely to develop PTSD (Tolin and Foa, 2006). Boys are also more likely than girls to develop Oppositional Defiant Disorder (Boylan et al., 2007) and Conduct Disorder (Nock et al., 2006). The moderation effects by gender found in this study are potentially at odds with these prevalence rates.

The moderation effects found in this study suggest that there may be too great a

focus on low-income African American boys' externalizing behavior, such that the underlying contribution of PTSS to this behavior is ignored. In other words, boys and girls may differ in their responses to traumatic events, such that boys are much more likely than girls to respond to traumatic experiences with aggressive and delinquent behavior. Furthermore, several other researchers have suggested that the increase in disruptive behavior diagnoses along with the limited success of treatments for these disorders may be at least partially based in undiagnosed and unresolved trauma (Baer & Maschi, 2003; Greenwald, 2002; Maschi, 2006; Whitfield, 2004a, 2004b). Others have also emphasized that the misdiagnosis of PTSD as another clinical problem in childhood or adolescence is a major concern (Margolin & Vickerman, 2007). The present findings provide additional support for these concerns, particularly with respect to low income African American boys.

Theoretical Considerations Concerning Gender Differences

In his book, *Lost Boys*, James Garbarino presents compelling accounts of why traumatic experiences may have a greater impact on the externalizing behavior of boys than girls, particularly African American boys living in *inner-city war zones*. In having the "highest rates of adult criminality, child maltreatment, gang activity, illicit drug sales, possession of illegal hand guns by kids, health problems in newborns, and school failure" (p.11), these neighborhoods provide a ripe context for trauma and conduct problems. Both African American adolescent girls and boys must cope with these difficult circumstances on a daily basis, but boys face different pressures and expectations compared to girls that may make their use of externalizing behavior in response to trauma

much more likely.

Garbarino (1999) points out several contextual factors that may uniquely promote a boy's violent behavior in socially toxic traumatic environments. First, boys are likely to experience *role reversal* when they belong to families lacking a dominant male figure. Without fathers in the home, these boys are required to be the "man of the house" by their mothers. Once in this role, these boys no longer view their mothers as authority figures and may resort to antisocial acts to protect themselves and their families. Second, boys may have no choice but to join a gang. In a kill-or-be-killed environment, gangs may offer boys the only source of protection when strong adult figures are absent. Finally, girls may be attracted to violent and delinquent boys. In socially toxic environments, such boys are seen as strong and powerful.

Garbarino (1999) points out another major pressure that may contribute to boys' conduct problems following trauma – gender socialization with respect to emotional expression. Mainstream American society emphasizes the importance of stoic male toughness and discourages boys from talking about their feelings. Instead, "boys are encouraged to act out their feelings through aggression" (p.51). These expectations of male toughness may be particularly strong in the *inner-city war zones* where a macho culture often dominates and expressions of negative affect incite victimization. In this context, boys may mask the negative feelings that follow exposure to traumatic events by engaging in aggressive and delinquent behavior. This idea is consistent with this study's results that showed that boys' delinquent behavior was more strongly predicted by symptoms of hyperarousal and intrusion compared to girls. Both of these symptom

clusters are characterized by negative affect, particularly fear, which would be difficult for an adolescent male to express in a culture that requires toughness for survival.

According to Garbarino (1999), cultural messages about what it means to be a man may combine with boys' experience of traumatic events to create a *covert depression* marked by "loss of the capacity to feel...and externalization of their pain" (p.42). This emotional numbing and engagement in aggressive and delinquent acts allows adolescent boys to cope with their trauma by distracting them from their pain and by punishing themselves and the world for their hurt, a hurt they are not able to express with words. Boys' use of emotional numbing may also inhibit empathic responding toward others and thus, increase their aggressive and violent behavior. If a boy cannot process his own feelings, how can he appreciate those of others? If he cannot feel empathy for others, what will stop him from victimizing them in a world that has victimized him and requires him to be tough and powerful? These emotional features are consistent with PTSS.

Limitations, Strengths, and Future Directions

The current study has several limitations that deserve comment. The first limitation concerns the external validity of the sample. The unique findings of the present study may not generalize to other samples with characteristics markedly different from those of the sample used in this study. The young adolescent African Americans sampled in this study face unique challenges as residents of low income neighborhoods in Chicago. Their exposure to violence and methods of coping may differ considerably from clinical samples of different ages with more severe symptomatology and diverse

traumatic experiences. Similarly, the sample was positively skewed for most variables such that there was an underrepresentation of early adolescents with higher levels of exposure to violence, trauma symptoms, and externalizing outcomes.

The second limitation of the current study concerns measurement. Only child-report measures of trauma symptoms and exposure to violence were utilized. Additional parent-report measures of these variables would have been helpful in strengthening conclusions and providing a means of assessing the relative importance of child- and parent-report for these variables. Also, the addition of “real world” measures of impairment (e.g., school performance, juvenile justice information) would have provided even greater clinically significant information concerning the relation between trauma symptoms and externalizing outcomes.

The final limitation of the present study concerns aspects of the research design and statistical analysis. Although the current findings lend support to the idea that trauma symptoms are the important mediating variable in the relation between exposure to violence and externalizing problems, no formal statistical tests for mediation were actually conducted. Additionally, the study design did not distinguish between the PTSS and self-medication hypotheses. Therefore, it is not clear whether the PTSS-externalizing link found in this study reflects (1) the fact that PTSS embodies the developmental and social cognitive consequences of trauma that make externalizing more likely or whether (2) youth use externalizing as a means of relieving PTSS. Finally, a longer follow-up period through later adolescence would have strengthened conclusions about the long-term effects of exposure to violence and trauma symptoms on aggression and

delinquency.

The present study also has several strengths. Its primary strength is its evaluation of the unique predictive relations between *all* individual PTSS clusters and aggression and delinquency in a young adolescent sample. Previous studies of youth tended to utilize total score measures of PTSS or operationalize externalizing problems too broadly (e.g., total externalizing; Levendosky et al., 2002) or too narrowly (e.g., substance use or dating violence; Lipschitz et al., 2003; Wolfe et al., 2004, respectively). The current study succeeded in demonstrating the importance of moving away from exclusive total score measurement by identifying numbing and dissociation as significant predictors of externalizing outcomes with opposite relations. Furthermore, intrusion was particularly predictive of delinquency, but not aggression. These new and valuable insights into the relations between PTSS and externalizing would have been missed if only the total scores for each were considered.

The second significant strength of the current study is its examination of how the relations between PTSS and externalizing problems differ by gender. Although this topic received little attention in previous research, this study succeeded in identifying important gender differences. In general, PTSS exerted a greater influence on boys' externalizing than girls'. As discussed previously, this is an important finding in light of the gender differences in the prevalence rates for these problems.

The third strength of the present study concerns the measurement of control and outcome variables. Including gender, exposure to violence, and previous year externalizing as control variables in analyses, provided a stringent test of the relation

between PTSS and aggression and delinquency. It also allowed for the assessment of the relative importance of PTSS and exposure to violence in predicting externalizing outcomes throughout the middle school years. The use of reliable measures of aggression and delinquency completed by the parent and the child also enabled valuable comparisons of the results between these two reporters.

The final strength of the present study concerns the sample. Although the new findings that emerged in this study may be unique to this sample, many of the results were supported by previous research. In this way, the use of the present sample enhanced the external validity of previous research by extending the findings of clinical or forensic samples (e.g., Fehon, Grilo, and Lipschitz, 2005; Wood et al., 2002) to an African American community sample. Another advantage of the sample was its fairly large size across assessment periods.

There are several important directions for future research in light of the limitations and strengths of the present study. First, longitudinal designs that follow children from early childhood through adolescence are needed to evaluate the relation between PTSS and externalizing in developmental context. This type of design would allow for further assessment of when and how this relation forms and how it may change throughout development. Second, mediational models should be utilized to provide more direct tests of the role PTSS clusters have in mediating the relation between exposure to violence and externalizing. Third, measures of functional impairment should always be included to further illuminate the clinical significance of the results. Fourth, gender should always be evaluated as a potentially important moderating variable in analyses.

Fifth, the impact of different types of traumatic events on the development of externalizing problems should be further explored, given that the present study focused only on exposure to violence. Finally, youth from high-risk communities should continue to be sampled to provide insight into how these processes operate beyond clinical settings. Investigations of representative samples of such youth may illuminate appropriate targets for prevention and intervention that in turn, may improve communities by stopping the cycles of violence and delinquency that too often plague disadvantaged neighborhoods.

Clinical Implications

In addition to providing suggestions for future research, the findings of this study also carry important clinical implications. The first concerns how PTSS should be assessed. Although the DSM combines avoidance and numbing symptoms into one cluster, the present findings do not support this approach for youth. These results actually suggest that avoidance and numbing are distinct clusters of symptoms that have opposite relations with externalizing problems. Similarly, the DSM does not include dissociation as a separate cluster of symptoms for PTSD. This approach is also not supported by the present findings for dissociation. Specifically, dissociation did not share the positive pattern of relations that the other PTSS clusters had with externalizing problems.

The second clinical implication concerns how externalizing problems should be assessed. The results of the present study lend support to the notion that an assessment of trauma symptoms should always accompany an assessment of externalizing problems. In particular, total PTSS, numbing, and intrusion may be important to assess at the outset

given their significant and positive predictive relations with aggression and delinquency. When confronted by young adolescents with externalizing problems, it is also important to get their report of their trauma symptoms and externalizing problems given that child report was often the source of significant findings in this study. It is also important to consider the role of gender in symptom presentation. The findings from this study suggest that PTSS may play more of a role in boys' externalizing than girls'.

Finally, it is important to consider the potential protective role that some trauma symptom clusters may have for low income urban African American youth against the development of aggressive and delinquent behavior. Specifically, dissociation, and avoidance to a lesser degree, significantly predicted less aggression and delinquency across the middle school years. It is important to acknowledge that for youth growing up in high-risk environments, subclinical levels of dissociation and avoidance may provide means of escaping from or coping with difficult circumstances. Failure to acknowledge this role by exclusively focusing on reducing these symptoms in treatment may inadvertently produce increases in externalizing problems if the adolescent is not also taught alternative coping strategies.

This recommendation is not meant to suggest that alternative methods of coping should not be pursued. They should. For example, although dissociation may protect against externalizing problems, it is associated with other problems like inattention (Kaplow et al., 2008). The adolescent should be taught effective coping strategies that do not compromise functioning in *any* domains. When exposure to violence and other traumatic experiences are at issue, these coping strategies must address all the clinical

sequelae of trauma, of which externalizing problems may only be a part, although often a very observable part. The salience of externalizing problems must not distract the clinician from the underlying problem, exposure to a traumatic event.

APPENDIX A:
TRAUMA SYMPTOM QUESTIONNAIRE (TSQ)

Directions: Tell us how true each of these statements has been for you today.

Scale: 0 = Not true at all, 1 = A little true, 2 = Pretty true, 3 = Very true

Intrusion:

- 13. Last night I had bad dreams or nightmares about something scary that happened.
- 18. I worried about being safe
- 19. I remembered something scary even when I didn't want to
- 20. Something happened today that reminded me of something scary that happened in the past
- 21. I felt like something scary was happening all over again
- 22. The scary thing seemed so real that I could actually see pictures of it in my mind
- 23. When I was reminded of the scary thing that had happened, my heart beat faster, my stomach hurt, or my head hurt
- 25. Things bothered me or made me mad or scared, even though they didn't seem to bother others

Dissociation:

- 8. Went away in my mind, tried not to think
- 9. Felt like things weren't real
- 10. Felt like I was not in my body
- 11. Pretended I was somewhere else
- 12. My mind went empty or blank

Numbing:

- 1. Didn't care about things I used to care about
- 2. Unable to feel upset (mad, sad, or scared) even when bad things happened
- 3. Unable to laugh or feel happy, even when something really good or funny happened
- 4. Felt that I might not live very long
- 5. Felt that my life might not be very happy

Avoidance:

- 6. Tried very hard not to think about something bad or scary that happened to me or someone else
- 7. Either did not or tried not to go to places that reminded me of something scary or bad that happened to me or someone else

Hyperarousal:

- 14. I got really scared, mad, upset or in a very bad mood
- 15. I watched things around me really closely so that nothing bad would happen
- 16. I felt really jumpy or scared when I heard loud noises or when someone came up behind me
- 17. I had trouble paying attention
- 24. I had trouble sleeping last night

APPENDIX B:
CBCL AGGRESSIVE BEHAVIOR SCALE

Directions: Below is a list of items that describe children and youth. For each item that describes your child now or within the past 6 months, please circle the 2 if the item is very true or often true of your child. Circle the 1 if the item is somewhat or sometimes true of your child. If the item is not true of your child, circle 0. Please answer all items as well as you can, even if some do not seem to apply to your child.

Scale: 0 = Not true, 1 = Sometimes or sometimes true, 2 = Very true or often true

- 3. Argues a lot
- 7. Bragging, boasting
- 16. Cruelty, bullying, or meanness to others
- 19. Demands a lot of attention
- 20. Destroys his/her own things
- 21. Destroys things belonging to family or others
- 22. Disobedient at home
- 23. Disobedient at school
- 27. Easily jealous
- 37. Gets in many fights
- 57. Physically attacks people
- 68. Screams a lot
- 74. Showing off or clowning
- 86. Stubborn, sullen, or irritable
- 87. Sudden changes in mood or feelings
- 93. Talks too much
- 94. Teases a lot
- 95. Temper tantrums or hot temper
- 97. Threatens people
- 104. Unusually loud

APPENDIX C:
THINGS I DO SCALE (TID) AND JUVENILE DELINQUENCY SCALE (JDS)
COMBINED MEASURE OF AGGRESSION

TID Items:

2. How often do you make up stories to get other children in trouble?
3. How often do you do things that bother others?
4. How often do you start a fight over nothing?
5. How often do you push or shove others?
6. How often do you get into trouble?
7. How often do you say mean things to others?
8. How often do you take other people's things without asking (when you know they wouldn't want you to?)
9. How often do you give other children dirty looks?

JDS Items:

2. I have attacked someone with a weapon in order to hurt or kill them
16. I have hit, kicked, or thrown things at someone in my family in order to hurt them
17. I have been involved in a gang fight or have participated in jumping someone
18. I have hit, kicked, or thrown things at someone that was not in my family in order to hurt them

APPENDIX D:
CBCL DELINQUENT BEHAVIOR SCALE

Directions: Below is a list of items that describe children and youth. For each item that describes your child now or within the past 6 months, please circle the 2 if the item is very true or often true of your child. Circle the 1 if the item is somewhat or sometimes true of your child. If the item is not true of your child, circle 0. Please answer all items as well as you can, even if some do not seem to apply to your child.

Scale: 0 = Not true, 1 = Sometimes or sometimes true, 2 = Very true or often true

- 26. Doesn't seem to feel guilty after misbehaving
- 39. Hangs around with others who get in trouble
- 43. Lying or cheating
- 63. Prefers being with older kids
- 67. Runs away from home
- 72. Sets fires
- 81. Steals at home
- 82. Steal outside of the home
- 90. Swearing or obscene language
- 96. Thinks about sex too much
- 101. Truancy, skips school
- 105. Uses alcohol or drugs for nonmedical purposes
- 106. Vandalism

APPENDIX E:
JUVENILE DELINQUENCY SCALE (JDS)
NONVIOLENT DELINQUENCY ITEMS

Directions: Please write 0, 1, 2, 3, 4, or 5 to let us know which of these statements are true for YOU. No one, not even your parents or the people at your school, will be allowed to see what you write here. Please be totally honest. There are no right or wrong answers.

Scale: 0 = Never, 1 = Once, 2 = 2 times, 3 = 3 times, 4 = 4 times, 5 = 5 times or more

1. I have skipped school or classes without permission from a parent or teacher
3. I have purposely damaged or destroyed property that was not mine (e.g., spray painting, breaking windows, or marking on walls)
5. I have stolen (or tried to steal) a bike, a car, or motorcycle
6. I have smoked cigarettes or cigars
7. I have used marijuana or other drugs
8. I have sold marijuana or other drugs
9. I have carried a weapon
10. I have been to court for something I did
11. I have run from the police
12. I have taken something from a store without paying for it
14. I have bought, sold, or kept something that I knew was stolen
15. I have gotten drunk on beer, wine, or liquor
20. I have been arrested by the police
21. I have run away from home and stayed away over night
22. I have purposely set fire to a house, building, car, or vacant lot
23. I have stolen something of value like a purse or wallet from someone

APPENDIX F:
EXPOSURE TO VIOLENCE SCALE REVISED (EV-R)

Directions: Please write 0, 1, 2, 3, 4, or 5 to let us know which of these statements are true for YOU. No one, not even your parents or the people at your school, will be allowed to see what you write here. Please be totally honest. There are no right or wrong answers.

Scale: 0 = Never, 1 = Once, 2 = 2 times, 3 = 3 times, 4 = 4 times, 5 = 5 times or more

1. I have skipped school or classes without permission from a parent or teacher
3. I have purposely damaged or destroyed property that was not mine (e.g., spray painting, breaking windows, or marking on walls)
5. I have stolen (or tried to steal) a bike, a car, or motorcycle
6. I have smoked cigarettes or cigars
7. I have used marijuana or other drugs
8. I have sold marijuana or other drugs
9. I have carried a weapon
10. I have been to court for something I did
11. I have run from the police
12. I have taken something from a store without paying for it
14. I have bought, sold, or kept something that I knew was stolen
15. I have gotten drunk on beer, wine, or liquor
20. I have been arrested by the police
21. I have run away from home and stayed away over night
22. I have purposely set fire to a house, building, car, or vacant lot
23. I have stolen something of value like a purse or wallet from someone

APPENDIX G:
STRUCTURE OF REGRESSION MODELS

1. Cross-sectional interaction $Y = (\text{gender} + \text{exposure to violence}) + (\text{total PTSS}) + (\text{gender} * \text{total PTSS})$
 Variables entered as follows:
 Step 1 (control variables): Gender, *exposure to violence*
 Step 2 (main effects): Total PTSS
 Step 3: (two-way interactions): All two-way interaction terms
 Outcome variables: Aggression, delinquency

2. Cross-sectional interaction $Y = (\text{Gender} + \text{exposure to violence}) + (\text{intrusion} + \text{dissociation} + \text{numbing} + \text{avoidance} + \text{hyperarousal}) + (\text{gender} * \text{intrusion} + \text{gender} * \text{dissociation} + \text{gender} * \text{numbing} + \text{gender} * \text{avoidance} + \text{gender} * \text{hyperarousal})$
 Variables entered as follows:
 Step 1 (control variables): Gender, *exposure to violence*
 Step 2 (main effects): Intrusion, dissociation, numbing, avoidance, hyperarousal
 Step 3: (two-way interactions): All two-way interaction terms
 Outcome variables: Aggression, delinquency

3. Longitudinal interaction $Y = (\text{baseline outcome} + \text{gender} + \text{exposure to violence}) + (\text{total PTSS}) + (\text{gender} * \text{total PTSS})$
 Variables entered as follows:
 Step 1: Control variables (baseline aggression or delinquency, gender, *exposure to violence*)
 Step 3: Main effects (total PTSS)
 Step 4: Two-way interactions
 Outcome variables: Aggression, delinquency

4. Longitudinal interaction $Y = (\text{baseline outcome} + \text{gender} + \text{exposure to violence}) + (\text{intrusion} + \text{dissociation} + \text{numbing} + \text{avoidance} + \text{hyperarousal}) + (\text{gender} * \text{intrusion} + \text{gender} * \text{dissociation} + \text{gender} * \text{numbing} + \text{gender} * \text{avoidance} + \text{gender} * \text{hyperarousal})$
 Variables entered as follows:
 Step 1: Control variables (baseline aggression or delinquency, gender, *exposure to violence*)
 Step 2: Main effects (intrusion, dissociation, numbing, avoidance, hyperarousal)
 Step 3: Two-way interactions
 Outcome variables: Aggression, delinquency

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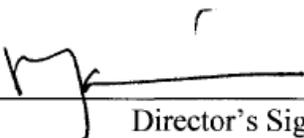
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